PAPERS OF THE EAST-WEST POPULATION INSTITUTE, published about eight times a year, facilitate early dissemination of research findings and state-of-the-art essays on the demography of Asia, the Pacific, and the United States. Annual subscription rate, $12.

NOTE TO CONTRIBUTORS: The Population Institute considers unsolicited as well as commissioned manuscripts for the Paper Series. Appropriate topics are population estimation and analysis; causes and consequences of demographic behavior; urbanization and population distribution; and population policies and programs. All manuscripts are reviewed. In selecting manuscripts for publication, the Institute considers quality of scholarship and usefulness to public officials and other professionals in the field of population. It also seeks contributions reflecting diverse cultural and disciplinary perspectives on population. The series can accommodate articles not necessarily suited for journals because of unusual length or treatment of subject. All copy must be typed double-spaced. For additional information on manuscript preparation, write to the Publications Officer, East-West Population Institute.

OTHER SERIAL PUBLICATIONS OF THE EAST-WEST POPULATION INSTITUTE:

Working Papers are circulated for comment and to inform interested colleagues about work in progress at the East-West Population Institute. They are intended to complement evidence of completed work as reflected in Papers of the East-West Population Institute and the Reprint Series. Single copies are available without charge upon request.

Reprint Series brings selected articles originating from Institute research but published elsewhere to the attention of population specialists who might not otherwise see them. Single copies available upon request.

Asian and Pacific Census Forum is a quarterly periodical reporting on census, vital registration, and population survey activities in Asia and the Pacific. The *Forum* contains technical articles on a range of topics related to demographic measurement, and reviews of new publications in the field. Issued in August, November, February, and May. Annual subscription rate, $5.

Serial publications are available without charge to libraries serving population specialists and to professionals and scholars in the field of population. Requests describing the nature of the research or program and the intended use of the publications should be addressed to the Publications Office of the Institute.

Acting Director: Kevin E. Cahill
Publications Officer: Sandra H. Ward
Editor: Elizabeth B. Cook
Production Assistant: Lucille Rocco
Cover design: Diane Ota

East-West Population Institute
East-West Center
1777 East-West Road
Honolulu, Hawaii 96848

BEST AVAILABLE COPY

R4500-1.11

Urbanization, education, and marriage patterns: four cases from Asia

Peter C. Smith
and Mehtab S. Karim

Number 70 • December 1980

PAPERS OF THE EAST-WEST POPULATION INSTITUTE

PETER C. SMITH is a Research Associate at the East-West Population Institute. MEHTAB S. KARIM was formerly a Research Intern at the East-West Population Institute and is currently a consultant to the United Nations, New York.

Library of Congress Cataloging in Publication Data

Smith, Peter Colin, 1943-
Urbanization, education, and marriage patterns.

(Papers of the East-West Population Institute ; no. 70)
Bibliography: p.
1. Family—Asia. 2. Urbanization—Asia. 3. Education—Asia. 4. Cross-cultural studies—Asia. I. Karim, Mehtab S., 1947- joint author. II. Title. III. Series: East-West Population Institute. Papers of the East-West Population Institute ; no. 70)
HQ663.S63 306.8'095 80-28099

CONTENTS

Preface *vii*

Abstract *1*

Data, methods, and strategy of analysis *5*

Four cases of nuptiality transition *9*

Village, town, city: residential differences in marriage patterns *17*

The importance of literacy and formal schooling *27*

Conclusion *38*

Appendix tables *39*

References *44*

TABLES AND FIGURES

Tables

1 Selected characteristics of the household surveys and of women in the samples *9*

2 Patterns of age at marriage by available racial, linguistic, and religious categories *16*

3 Patterns of first marriage by urban-rural or metropolitan residence and duration of marriage: Korea, Malaysia, Pakistan, and the Philippines *21*

4 Summary of multiple classification analysis results at the individual and areal levels: age at marriage by place of residence *23*

5 Multiple classification analysis of the effect of place of current residence on the mean age at marriage *24*

6 Parameters of the distribution of age at marriage and years of schooling by current residence and duration of marriage: Korea, Malaysia, Pakistan, and the Philippines *33*

7 Pearson correlation coefficients and least squares regression results relating age at marriage (y) and years of schooling (x) within current residence and duration of marriage categories: Korea, Malaysia, Pakistan, and the Philippines *35*

8 Hypothetical future nuptiality changes in response to future changes in female literacy *37*

A1 Basic data for Figure 2 *40*

A2 Mean ages at marriage among women by place of current residence, place of birth, and duration of marriage: Korea, Malaysia, Pakistan, and the Philippines *42*

A3 Mean ages at marriage among females by current residence, duration of marriage, and literacy status: Korea, Malaysia, Pakistan, and the Philippines *43*

Figures

1 National trends in the index of first marriage (I_{em}): 1900–75 *6*

2 Comparative estimates of the trend in the mean age at marriage: Korea, Malaysia, Pakistan, and the Philippines *10*

3 Singulate mean ages at marriage among females in the provinces of Korea (1970), Pakistan (1961), Philippines (1970), and West Malaysia (1970) *13*

4 Recent changes in I_{em} for geographic areas in Korea, Malaysia, Pakistan, and the Philippines *15*

5 Recent urban-rural differences in I_{em} for geographic areas in Korea, Malaysia, Pakistan, and the Philippines *19*

6 The European and Asian literacy transitions: levels by sex for selected countries *28*

7 Relationship between mean age at marriage and the female literacy rate: estimates from survey and census data for selected countries *31*

PREFACE

Most of the initial work on this paper was done in July 1975 and July 1976 while Mehtab S. Karim was an Intern of the East-West Population Institute. An earlier version was presented at the Conference on Comparative Fertility Transition in Asia, Tokyo, Japan, March 27–31, 1978. Dee Chapon provided much of the computer programming and statistical assistance.

The KIRBS survey was made available by that organization through Dr. James Palmore, who also made available the West Malaysia Family Survey data. The Pakistan National Impact Survey data were made available to the second author, who participated in the work of the survey. The Philippine National Demographic Survey data were provided by Dr. Mercedes B. Concepcion of the Population Institute, University of the Philippines.

ABSTRACT A transition in marriage patterns is under way throughout Asia. This paper examines nuptiality transitions as they are occurring in four culturally contrasting Asian societies. Individual-level survey data from Korea, Malaysia, Pakistan, and the Philippines are compared with areal census data from these countries, and the strengths and shortcomings of each type of data and each mode of analysis are indicated. Geographic differentials in nuptiality within the countries and a pattern of nuptiality decline which is nearly ubiquitous across areas are documented. Two kinds of explanatory variables are examined in detail and shown to be important: variables related to urbanization, urban exposure, and urban residence; and variables related to the level and consequences of schooling.

It is common practice to compare the 19th century European demographic transition with contemporary events in Asia. There are at least surface similarities between these regions regarding the character and tempo of their fertility and mortality changes. But in the realm of marriage behavior similarities between European and Asian transitions are minimal and the European experience is of interest mainly as a sharp contrast to what is occurring in Asian societies today. The demographic transition in Europe was associated in most countries with stable or declining mean ages at marriage, starting from regimes of late marriage before the onset of transition (Hajnal, 1965; Coale, 1969). Throughout Asia the reverse is true.

The Asian marriage transition has been described and some of its principal social origins identified (Agarwala, 1969; Blayo, 1978; Goode, 1963; Luhadia et al., 1972; P.C. Smith, 1980a); in addition, some attempt has been made to assess, comparatively, the substantial fertility impact of the nuptiality transition (Cho and Retherford, 1973; Lee and Chao, 1973; Caldwell et al., 1980; P.C. Smith, 1980b; Population Information Program, 1979; International Center for Research on Women, 1979). On the whole, however, Asian marriage patterns have been examined mainly by researchers interested in a single country or in the analysis of a particular set of data.[1] The literature

1 The literature on individual countries is voluminous. Among the contributions we have found especially useful are Agarwala (1957) on India; Barclay (1954) on Taiwan; Chang (1974) on Singapore; Fernando (1975) on Sri Lanka; McDonald (1979), McDonald and Abdurahman (1974), and Geertz (1961) on

contains little cross-national comparison, and even less often are results from multiple data sources compared.

This paper reports on an analysis of the nuptiality transitions in four culturally contrasting Asian societies. Individual-level survey data from the Republic of Korea, West Malaysia (excluding Sabah and Sarawak), Pakistan (formerly West Pakistan), and the Philippines—hereafter referred to as Korea, Malaysia, Pakistan, and the Philippines—are compared and juxtaposed with areal census data from these four countries, and the strengths and shortcomings of each approach to nuptiality analysis are indicated. As in most studies of this kind, we have elected to sacrifice a degree of depth in our analysis of the individual countries in order to achieve comparability across all of them with respect to a few key variables. Special attention is paid here to the major social changes encompassed by two processes: urbanization, and educational development. The effects of these processes on nuptiality are compared across the four societies and with the course of social change in industrializing Europe.

These two social transformations are of obvious significance in Asian development, and they are of special interest to demographers because the course of each has differed significantly from the historical European experience. This raises the prospect that their interactions with marriage and fertility patterns may differ from the European development process as well.

Urbanization has progressed slowly in Asia relative to the European experience in the 19th century, and Asia's current level of urbanization is low among developing regions (Davis, 1975). Both the low level and the slow rate of urbanization derive mainly from the fact that Asia's massive rural population has grown so rapidly. Another significant factor in the slow pace of urbanization is the capital intensive character of much urban investment in the post war period. These differences in the urbanization process combined with the distinct character of rural social structure in much of Asia, as compared with European societies, to create very different implications for rural-urban relations and rural-urban differentials, including nuptiality differentials.

Indonesia; Nash and Nash (1963) on Burma; and Salaff (1972) on Hong Kong. The literature on the four countries under study here includes, among others: Afzal (1973), Alam (1968), Iftikhar and Afzal (1975), Korson (1965), and Sadiq (1965) on Pakistan; Caldwell (1963), Palmore et al. (1970), and W. Smith (1961) on Malaysia; Flores (1974), Murray (1972), Scheans (1965), and P.C. Smith (1975) on the Philippines; and Kim (1972) on the Republic of Korea.

In sharp contrast, the Asian educational transformation has progressed well in advance of other aspects of the development process. The stress on education has been a consequence of government action in most countries, encouraged by an ideological consensus over the desirability of education reaching both sexes and even the lowest social strata. This consensus over universal schooling, taken for granted today, was largely absent in 19th century Europe. In general, national educational systems in Asia have been more egalitarian, more secular, and have had even more ambitious learning goals than corresponding systems in 19th century Europe (Resnick and Resnick, 1977). Their accomplishments have been uneven but impressive nevertheless.

Historical differences like these raise questions about the impact of the two processes on marriage patterns. Indeed, research to date has revealed important differences with the European experience, and in general there is a good deal of ambivalence in both the empirical and theoretical literature over the direction and strength of the effects of both education and urbanization on marriage and fertility, particularly over the institutional and behavioral linkages between each of these processes and demographic change.

Marriage is most often viewed as a supply factor in some variant of a household decision model of fertility, along with the biological capacity to reproduce (Easterlin, 1978). In these fertility models the determinants of marriage timing are not usually considered in any detail, though there have been a few applications of the framework to marriage decisions (Becker, 1973–74; Cochrane, 1979).

Within such a framework, Cochrane suggests several effects of education on marriage timing. She distinguishes the direct effect of time spent in school (not likely to be important unless marriage occurs quite early), a demographic effect via the size of the pool of eligibles, and an effect via the opportunity costs of marriage versus remaining single. The last two effects are thought to be opposite in direction for males and females because higher educational attainment only increases the pool of eligibles for men while reducing it for women (given prevailing hypergamous systems of mate selection); and a high earnings potential increases a male's financial ability to marry with virtually no opportunity costs, while a higher earnings potential for a female also increases her opportunity costs of marrying (given role conflicts between work and staying at home). The economic perspective leads to the prediction that high-education males will marry earlier than low-education males, with the opposite prediction for females. The results presented in this paper conform to the prediction for females, but

with the available data we cannot examine education's effect on male marriage timing.

In contrast, the typical sociological framework reflects greater interest in the role of changing institutional arrangements in LDCs in motivating later marriage for both sexes. In particular, education is often linked to changes in family organization and thus to marriage and fertility behavior (e.g., Caldwell, 1980). And, some important global differences in marriage timing are said to reflect broad regional differences in family systems (Goode, 1963; Dixon, 1980; P.C. Smith, 1980a). Other research of this more institutional or cultural orientation treats nuptiality as an intervening variable with significant impact on fertility (Davis and Blake, 1956; Holsinger and Karsarda, 1976).

A related line of argument of a more historical character relates changes in marriage timing to the motivational, behavioral, and technological transformations leading to widespread and effective use of birth control (Matras, 1965). It has been observed that in Europe the historical disassociation of marital exposure and pregnancy led to earlier marriage in the decades following demographic transition. (This aspect of the European experience raises an important question about the future of Asian nuptiality once birth control becomes widespread, a condition that does not seem far off for some Asian populations, but that question is separable from the early transition nuptiality patterns of interest here).

Comparisons of urban-rural differentials across regions globally (Dixon, 1980; P.C. Smith, 1980a) yield an observation that we will explore further in this paper: that there is something in the character of family systems which leads to later urban than rural marriage in some cultural settings but earlier urban than rural marriage in others. In many Western European societies characterized by stem family systems, urban marriage is earlier than rural, or at least not noticeably later than rural, and this late marriage among farm households is linked to requirements of the rural social system for inheritance of land or the accumulation of other resources before marriage. These requirements constrain rural marriage, but urban dwellers are not constrained in this way, especially if urban employment creation is reasonably rapid (Habbakuk, 1955). In contrast, "joint" and other kinds of extended family system are said to make early marriage possible by cushioning young couples from the short-run costs of household formation. In the present analysis we also find a sharp difference between European and Asian urban-rural nuptiality differentials.

These comments in effect pose a complex research agenda for the

future. The goals of this paper are more limited: first, to present and examine data indicating certain empirical contrasts between Asia and Europe at roughly comparable times in their economic histories; and second, to compare some important Asian populations during the recent period of very rapid change.

A brief overview of the contemporary Asian nuptiality transition, drawn mainly from material reported in detail elsewhere (P.C. Smith, 1980a), places the nuptiality experience of the four societies under study in the context of Asia as a whole.

In summarizing world marriage patterns, Bourgeois-Pichat (1965) notes that proportions currently married among Asian women are intermediate in magnitude–generally higher than schedules for Europe and Latin America but lower than schedules from North and sub-Saharan Africa. His comparison implies, however, that roughly common patterns are found *within* each of the world's regions. On the contrary, areal analysis of marital status data from ten Asian countries (P.C. Smith, 1977; 1980a) highlights the great diversity that exists across the Asian region with respect to the timing of marriage–especially among the south, southeast, and east Asian subregions, and within these zones and countries.

That analysis also demonstrates that a quantitatively important and virtually universal transition toward later marriage has been under way for several decades in the Asian region. Figure 1 depicts the transition for a number of Asian countries. Nations from the three major subregions of Asia, and countries at all levels of economic development, have shared in the transformation. Figure 1 also indicates that the four countries considered in this paper provide a fair representation of the Asian experience. All have witnessed considerable change in marriage timing; each of the three subregions is represented, as is a range of contemporary levels of marriage.

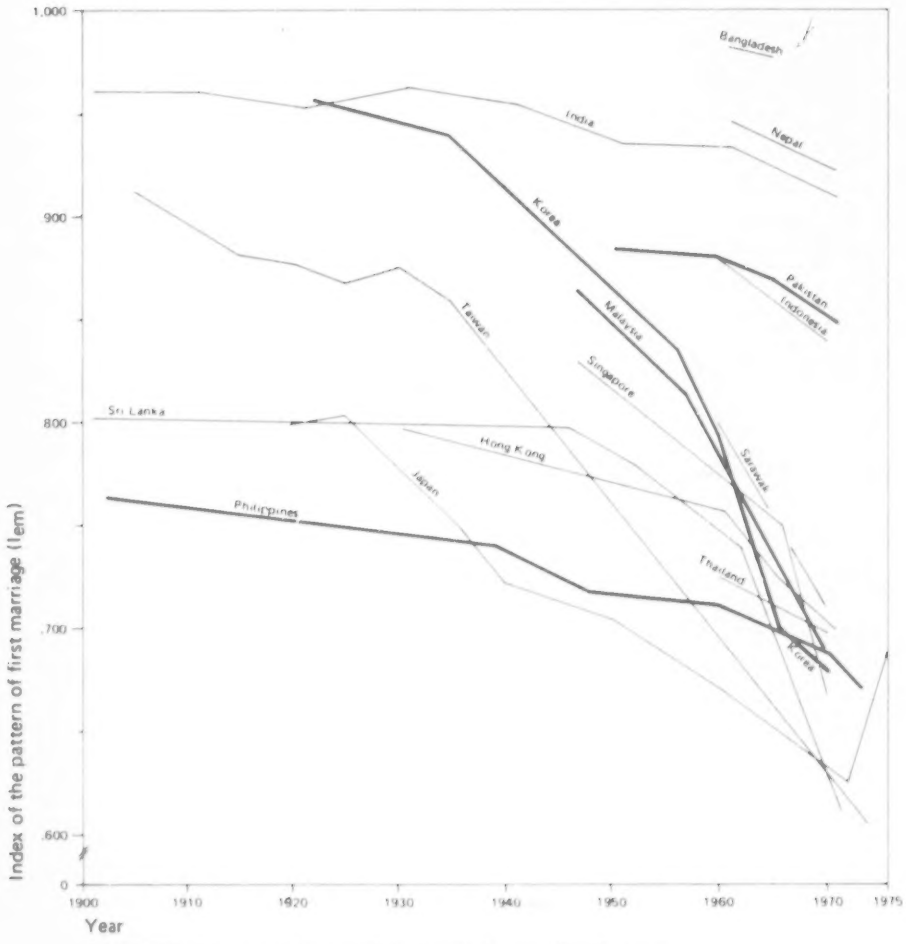
DATA, METHODS, AND STRATEGY OF ANALYSIS

We compared two kinds of data on marriage patterns: marital status distributions for geographic areas in successive censuses, and individual-level survey information for representative samples of currently-married women.

Census data on marital status

All marital status information has been taken from published census sources that reflect similar de facto concepts of marital status (for references and further discussion see P.C. Smith, 1980a). The following

FIGURE 1 National trends in the index of first marriage (I_{em}): 1900–75



SOURCES: Computed from published marital status distributions.

nuptiality indicators have been calculated from this information: percentages single by age group, Hajnal's singulate mean age at marriage (SMAM), and a variant of Coale's index of marriage pattern (I_m).

The singulate mean age at marriage or SMAM (Hajnal, 1953) utilizes percentages single from one census or survey to obtain, using a single-decrement procedure, the implied average number of years of single life for a hypothetical cohort. It yields mean ages that typically differ from means obtained from vital statistics or retrospective survey responses, and that refer to an indeterminant segment of time prior to the census or survey. Coale's well-known index of marriage pattern (I_m) is based on numbers of women *currently* married by age (Coale, 1969), whereas our variant (which we label I_{em}) utilizes numbers *ever* married (P.C. Smith, 1978). Coale's I_m measures the impact of the whole marriage pattern (including marital dissolution and remarriage) on fertility, while our I_{em} isolates the effect of the first marriage process. I_{em} is well-suited for our purpose and is most analogous to the SMAM and to other survey-based indicators of age at marriage.

Each of these indexes is weighted, or is expressed in relation to a standard pattern. I_m (and our I_{em}) approach unity to the degree that marriage is universal in the 15–49 age range, and the age-specific proportions married used in the calculation are weighted by the very high Hutterite marital fertility pattern for 1921–30. SMAM incorporates a fixed weight across the age groups.

The household surveys

We used surveys conducted in the late 1960s or early 1970s. These surveys were conducted mainly to obtain information about reproductive behavior, but they also generated information related to the timing of first marriage among women.

In 1970–71 the Korean Institute for Research in the Behavioral Sciences (KIRBS) conducted a survey entitled Korean Attitudes and Birth Control Behavior. A stratified multi-stage sampling design was used to obtain a probability sample representing Korea, and a total of 1,883 ever married women in the age range 19–44 were interviewed in the sampled households (Chung et al., 1972:18–19). The present study utilizes data on 1,814 currently and once married women from this survey.

The West Malaysian Family Survey, conducted in 1966–67, was designed to obtain fertility and other socioeconomic and demographic indicators for currently married women in the childbearing ages (Government of Malaysia, 1968). Based on a probability sample of

households in West Malaysia, the survey resulted in completed interviews for 5,457 currently married women 15–44 years of age. The present analysis is based on 4,497 once married women from this sample.

Data for Pakistan have been taken from the National Impact Survey, conducted in 1968–69. This was a national probability sample survey that collected benchmark data on certain socioeconomic and demographic variables (Government of Pakistan, n.d.). A two-stage stratified sampling procedure covered 3,340 households within which 2,910 once and currently married women below the age of 50 were interviewed.

In the Philippines, the first National Demographic Survey (NDS) was conducted in 1968. A simple, stratified, two-stage sampling design was used to obtain interviews with ever married women below the age of 50 (Flieger and Smith, 1975). This total included 4,281 once and currently married women whose marriage patterns are examined here.

Despite differences in the goals and methods of these surveys, their coverage of the national populations is broadly comparable. The range of social-economic development levels represented by the four countries is illustrated in Table 1, which also introduces the major socioeconomic variables of interest.

The strategy of analysis

At the simplest level our analysis is descriptive: both geographic data for subnational areas and the survey results were exploited in this fashion. In addition, we undertook several kinds of analytic decomposition of the observed patterns. The total variance in age at marriage was decomposed into within- and between-category components in order to establish a kind of social "map" of nuptiality variations within each country, and these "maps" were compared across countries.

The descriptive analysis identifies two sets of factors as the most important determinants of nuptiality change: first, urbanization, urban exposure, and urban residence; and second, the level and consequences of schooling. These factors were examined using regression and multiple classification analyses. Throughout, comparisons are offered of results at the areal and individual levels. Variance decompositions, regressions, and multiple classification analyses all indicate points of similarity and difference between results at these two levels.

TABLE 1 Selected characteristics of the household surveys and of women in the samples

Characteristic	Country			
	Korea	Malaysia	Pakistan	Philippines
Date of survey	1970–71	1966–67	1968–69	1968
Age range covered	19–44	15–44	15–49	15–49
Number of once and currently married women[a]	1,814	4,497	2,910	4,281
Mean current age	31.9	29.9	30.5	34.0
Mean marriage duration	11.6	12.3	13.5	13.8
Mean age at first marriage	20.3	17.6	16.0	20.2
Percentage living in largest metropolitan area[b]	38.3	5.8	4.0	9.7
Percentage living in urban areas	54.8	26.1	27.8	29.0
Percentage literate				
Urban	85.8	70.8	27.3	91.2
Rural	63.1	46.3	4.2	75.7
Percentage with six or more years of schooling	12.8	8.5	3.2	19.5[c]
Percentage in households with electricity	u	43.0	27.4	38.3

u—unavailable.

a All subsequent figures pertain to once and currently married women only.

b Seoul, Kuala Lumpur, Karachi, and Manila, respectively.

c Eight or more years of schooling.

FOUR CASES OF NUPTIALITY TRANSITION

Survey versus census evidence of delayed marriage

The four countries under study have experienced trends in female nuptiality much like the changes taking place in other countries of the Asian region. However, the trends which are clear in the census-based indexes of nuptiality (I_{em}) are obscured by biases in the retrospective survey responses on age at first marriage. We have computed mean ages at marriage for current-age and duration-of-marriage groups in each survey. These two types of tabulation yield quite different results; precisely how different is evident in Figure 2, where the means are

plotted against the calendar periods in which they occurred (or might be assumed to have been concentrated).[2]

For two principal reasons, the upward trend in age at marriage so evident in the census marital status information is not indicated clearly by the retrospective survey results. First, in the trends by current age the experience of the younger age groups is only partial and the means are correspondingly low. Only after age 30 or so have most of the ultimate events for a cohort actually occurred by the time of the survey. At the other end of the age range, say for ages beyond 40 or so, recall problems become severe. Second, the means by duration category suffer, though only at the longer durations, from the truncation of current ages at age 45 or 50 in each of the surveys (Ryder, 1975). For example, women married 20 years or longer tend to be over age 40; many are above age 45 or 50 and therefore do not appear in the samples because of censorship at an upper age limit. Since in the longest duration categories the women who married earliest are currently at the oldest ages, these persons are especially underrepresented because of age-truncation and the means for longer durations consequently are overstatements of the true means. In contrast, short-duration women suffer minimally from recall problems and neither they nor any of their marriage experience is censored. The pattern of error is opposite in direction for age- and duration-specific tabulations: age tabulations are most reliable in the moderately recent past, but the experience of younger women is very incomplete; duration-specific tabulations are poor at longer durations but are reliable at short durations.

We can approximate the extent of censorship of events among the younger age groups by assuming the distribution of women by age at marriage in appropriate model nuptiality schedules.[3] Doing so, we

2 The means for the duration groups D_i centered i years before each survey are easily allocated to calendar periods. But, because means by age group describe events dispersed over time, they cannot be plotted so precisely. We have sought a rough indication and comparison by plotting these means on the assumption that all events in an age group i occurred at age a_i (the mean age at marriage for the age group); the mean age at marriage for each age group has been plotted as many years before the survey date as the central age for the group exceeds a. Table A1 contains the data shown in Figure 2.

3 We selected Coale (1971) model nuptiality tables using the parameters a_0 and k obtained from published proportions married. The parameters are as follows (a_0, then k): Korea (17.7, .466); Malaysia (12.6, .588); Pakistan (12.5, .592); Philippines (14.0, .784). Values of $g_S(x)$ from Coale's Table 2 suggest the following proportions marrying after specified ages (age, then proportion): Korea (30, .036); Malaysia (30, .020); Pakistan (30, .020); Philippines (35, .034).

conclude that the duration-specific and age-specific data from each of the surveys that are most reliable (not significantly censored or incomplete) are as follows:

Age or duration	Korea	Malaysia	Pakistan	Philippines
Upper age cut-off in survey	45	45	50	50
Age by which 96% of events have occurred	above 30	above 30	above 30	above 35
Duration-based estimates reliable to duration. . .	15 years	15 years	20 years	15 years
Age-based estimates reliable above age. . .	30 years	30 years	30 years	35 years

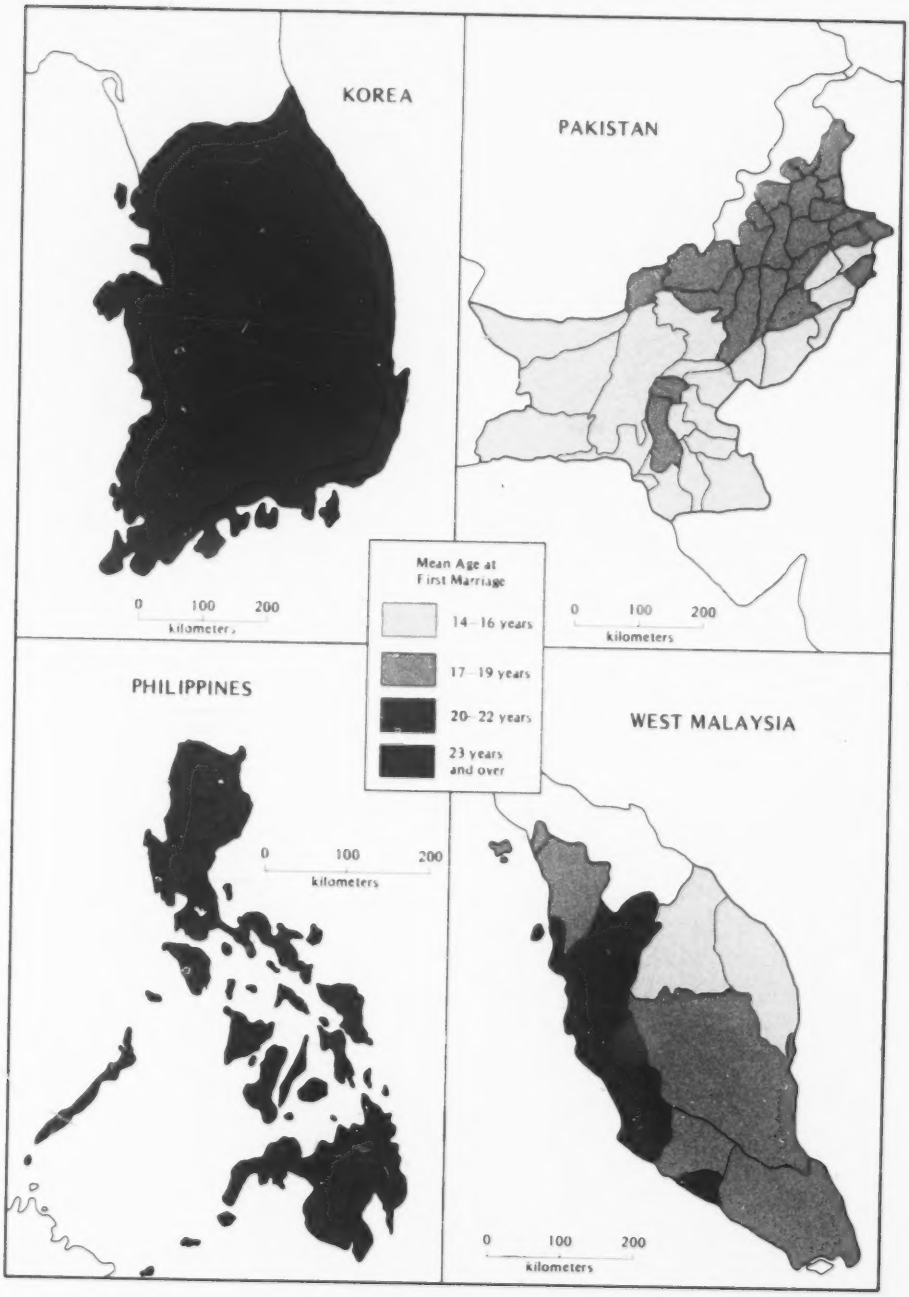
It seems unwise to interpret the trend line for age groups until after age 30 or so, and perhaps after an even older age in the Philippines, where some events seem to occur at more advanced ages. A similar argument leads us to ignore the trend across duration categories prior to 15 or 20 years or so before the surveys. When the age cutoff is 45, for example, and most events occur by age 30, only durations up to 15 years have nearly complete experience.

Having determined the segments of the age and duration-of-marriage curves of greatest interest, we have the trend lines indicated in Figure 2. Juxtaposing trends in SMAMs from the censuses, we have patterns which are somewhat reassuring. Nevertheless, our overall conclusion is that the trends in nuptiality cannot be seen very clearly from these surveys, at least not so clearly as in cross-sectional data from the periodic censuses. On balance, we conclude that duration groups offer the best opportunity for analysis of nuptiality trends. They provide the most reliable estimates of marriage timing, at least for the important though limited segment of time immediately preceding each survey.

Census evidence of geographic differentials

Maps of provincial levels of the SMAM (Figure 3) demonstrate not only the range of nuptiality experience across the countries but also the extent of variability within each of them. (We use "province" as a general term in this paper to refer to *do* in Korea, "state" in Malaysia, "district" in Pakistan, and "province" in the Philippines.) Relatively late marriage is found along the western provinces of Korea as well as in Kyongsangpuk Do and Pusan. In Pakistan relatively late marriage (at least in relation to elsewhere in Pakistan) is found mainly in the

FIGURE 3 Singulate mean ages at marriage among females in the provinces of Korea (1970), Pakistan (1961), Philippines (1970), and West Malaysia (1970)



northern districts. In the Philippines the highest SMAMs are found in Central Luzon near Manila and in the Western Visayan islands, whereas in Malaysia the highest SMAMs are found along the relatively developed western coast.

Geographic ubiquity of change

One of the most remarkable aspects of the Asian nuptiality transition is its geographic spread and its broad uniformity of tempo across areas. Just as virtually all Asian nations are involved in the current transition, nearly all subareas within each of them are witnessing changes of magnitude.

Data for a total of 137 subareas in Korea, Malaysia, and the Philippines are presented in Figure 4, and for all but six a downward shift in I_{em} is indicated. Moreover, the data for Malaysia represent the three racial groups separately and even at this level of detail similar changes are found throughout. In all three countries absolute amounts of change during the period seem largely unrelated to initial levels of I_{em}.

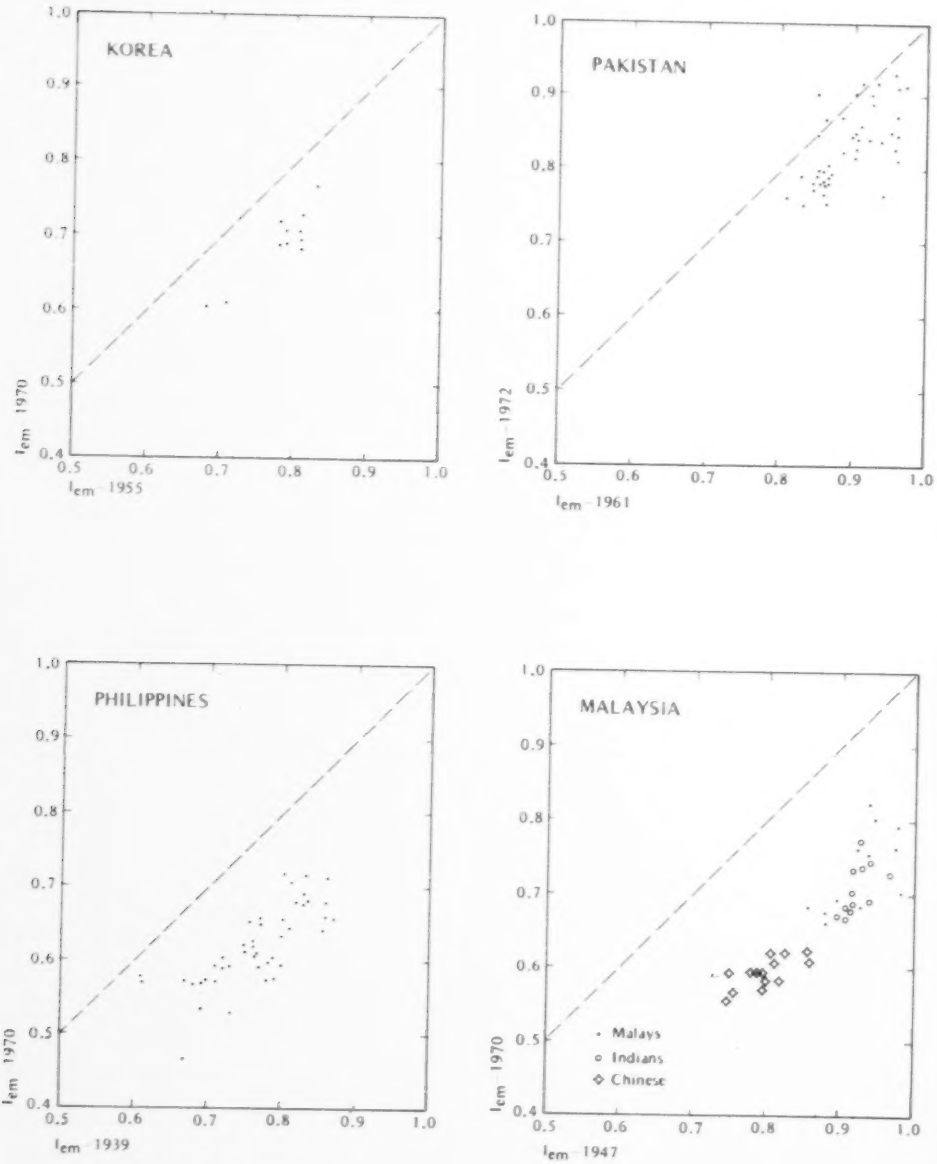
Racial, linguistic, and religious differences

For each of the countries, the major (or at least the most obvious) cultural variations in nuptiality can be summarized (Table 2). The racial, linguistic, and religious categories examined here are relatively enduring compositional features of these societies, so the differentials presented might be viewed as the fixed social topography upon which major transformational changes (like urbanization and educational attainment) are occurring.

Korea is predominantly Confucian ("other" in Table 2) and Buddhist, and these groups have similar marriage patterns. But the Christian minorities in Korea (Protestant and Catholic) marry about 1.5 years later and have somewhat higher proportions marrying at older ages. The average religious differential is small, and in an analysis of variance (not shown) only 4 percent of the individual-level variance in age at marriage is accounted for by religious group differences. Language differences, shown for Pakistan and the Philippines, are also very small and negligible proportions of variance are accounted for.

Malaysia is a contrasting case, where the religious and racial division among Malays (predominantly Muslim), Chinese (Buddhist), and Indians and Pakistanis (mainly Hindu and Muslim, respectively) are large and of great social significance. Age at marriage differentials

FIGURE 4 Recent changes in I_{em} for geographic areas in Korea, Malaysia, Pakistan, and the Philippines



across these groups span as much as four years and the racial and religious classifications account for, respectively, 18 and 16 percent of the individual-level variance.

In our examination of urbanization and education, religious and linguistic or racial differences are ignored in Korea, Pakistan, and the Philippines on the strength of the evidence reported here, but they are considered in the case of Malaysia.

VILLAGE, TOWN, CITY: RESIDENTIAL DIFFERENCES IN MARRIAGE PATTERNS

The contrast between the Asian and European nuptiality transitions is especially evident with respect to the pattern of urban-rural differentials. Many observers of the transition in Europe have argued that industrialization shattered agricultural as well as urban (e.g., guild) barriers against early marriage, and that the result was much earlier marriage in rural proto-industrial and urban proletarian settings than in traditional rural and more constraining urban circumstances (Everseley, 1965; Habbakuk, 1955; Knodel and Maynes, 1976; Lesthaeghe, 1977; Petersen, 1960). But the evidence in this regard is inconclusive; observed nuptiality differentials between European cities and their hinterlands are generally small in magnitude and inconsistent in direction. Anderson (1976) examined county-level data for England and Wales in 1861 and did find that the singulate means for both sexes were higher in the rural than the urban sectors (excluding London, where later marriage prevailed). But the intersectoral differences are not great. On the other hand, the impact of rural proto-industrialization on age at marriage in England is clearly evident in Levine's (1977) analysis of reconstitution results from Shepshed, Bottesford, Colyton, and Terling. Knodel and Maynes (1976) present 19th century data for a number of European countries and observe small urban-rural differentials—in both directions. Among German states they find no evidence of earlier marriage in urban areas, though they suggest the possibility that the urban singulate means may be higher than otherwise due to the presence of military conscription and the garrisoning of troops in urban areas. Flinn et al. (1977) present data describing geographic areas in Scotland over the 1861–1931 period: again, urban-rural nuptiality differences are small, and they generally indicate earlier marriage in cities and towns. On balance, though Europe urbanized at a rapid rate relative to that of most of Asia (Pernia, 1977), urban and rural sectors in Europe remained broadly similar in the timing of marriage.

An examination of Asian urban-rural nuptiality differentials has shown the contrast with Europe to be pronounced. Every Asian society on record shows urban women marrying later than rural women, and often the differentials are quite substantial (P.C. Smith, 1980a). In exploring the impact of urban versus rural residence and urban exposure on age at marriage in the four Asian countries under study here, we take special note of the impact of rural versus urban birth and rural-urban migration on these cross-sectional differentials. We also intend to show that much of the individual-level rural-urban differential in age at marriage is a function of differences in the composition of the population with respect to educational attainment. In a subsequent section the role of the schooling process and its correlates is pursued further.

Urban-rural differences by geographic area

Areal data from the four countries demonstrate the near-ubiquity of an urban-rural differential favoring the urban sector.[4] In Figure 5 nearly all points lie below the diagonal line denoting urban-rural equality on I_{em}. In Korea the urban I_{em} is 15.3 percent below the rural, and marriage is later in the urban than in the rural part of every *do.* The I_{em} for metropolitan Seoul is 17.8 percent below the rural level and is lower than for any other area, urban or rural. A similar observation applies to the provinces of the Philippines–where urban I_{em} is 20.2 percent below and Manila I_{em} 29.0 percent below the rural–and to a lesser degree to the districts of Pakistan. (But in Pakistan the urban level is below the rural by only 6.4 percent, and Karachi is not a leading area. The exceptions include five peripheral districts in the northeast and west.)

Urban and rural levels of I_{em} are also highly correlated across geographic units of each country, indicating perhaps a significant effect of urban sectors on their surrounding rural hinterlands (or vice versa). In none of these countries does the absolute amount of urban-rural difference seem related to the rural or urban level of I_{em}.

Survey trends and differentials by current residence

These areal results are corroborated by our survey differentials, which

4 Even urban definitions similarly conceptualized generally do not yield data that are truly comparable because of essential variations in patterns and intensities of rural settlement and urban agglomeration. The urban definitions used in the four censuses and the four surveys employed here are those deemed best by the respective census organizations.

FIGURE 5 Recent urban-rural differences in I_{em} for geographic areas in Korea, Malaysia, Pakistan, and the Philippines

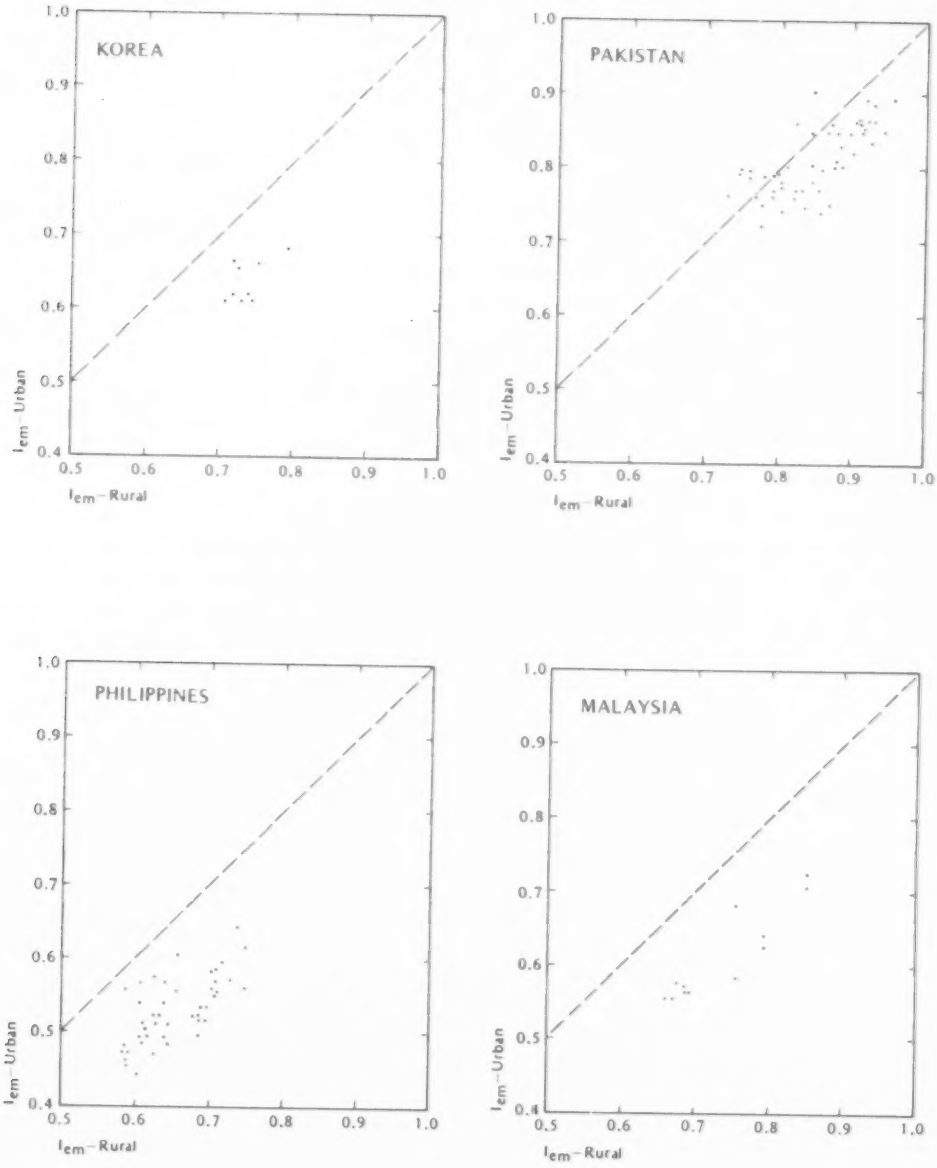


FIGURE 2 Comparative estimates of the trend in the mean age at marriage: Korea, Malaysia, Pakistan, and the Philippines

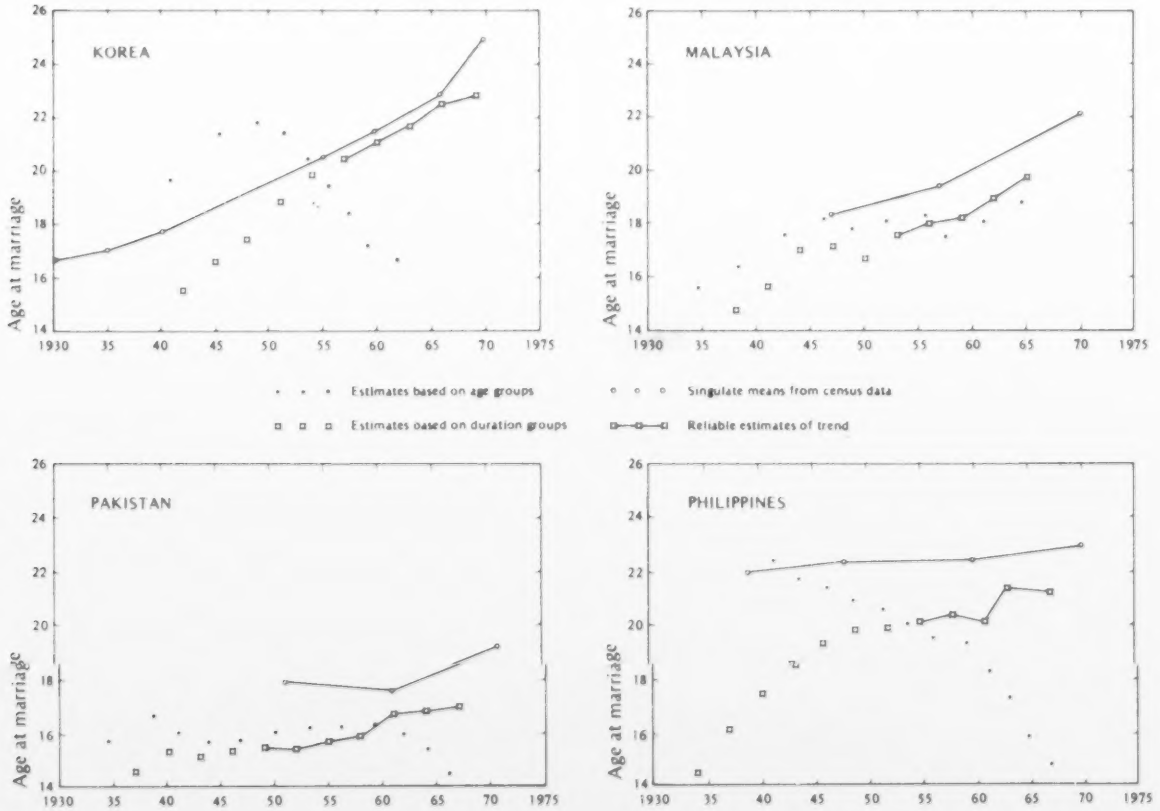


TABLE 2 Patterns of age at marriage by available racial, linguistic, and religious categories

Country and cultural category	Sample *N*	Percentage distribution	Percentage marrying by age group: Under 15	15–18	19–22	23+	Mean age at marriage
KOREA, religious group							
Buddhist	406	22.6	1.3	29.7	49.2	19.8	19.8
Protestant	188	10.4	1.1	13.2	53.7	32.0	21.5
Catholic	87	4.8	0.0	19.5	42.5	38.0	21.6
Other	1,117	62.1	2.0	35.0	44.6	18.4	20.0
MALAYSIA							
Religious group							
Buddhist	1,080	24.3	3.7	30.0	44.7	21.6	20.1
Christian	110	2.5	2.7	26.3	43.6	27.4	20.6
Hindu	487	11.0	17.2	53.8	21.9	7.1	17.2
Islamic	2,765	62.2	26.0	49.5	18.9	5.6	16.6
Racial group							
Malay	2,715	61.9	25.9	49.3	19.0	5.8	16.6
Chinese	1,110	25.3	2.5	28.7	44.8	24.0	20.4
Indo-Pakistani	557	12.8	17.7	51.4	22.0	8.9	17.3
PAKISTAN, language group							
Punjabi	1,701	61.3	34.1	48.3	14.4	3.2	16.2
Pushto-Baluchi	381	14.0	37.0	50.3	10.7	2.0	15.7
Sindhi	382	13.4	60.4	33.9	4.7	1.0	15.0
Urdu-Gujrati	431	11.3	37.5	48.1	11.2	3.2	15.9
PHILIPPINES, language group							
Ilocano	382	10.2	6.3	33.2	37.7	22.8	20.0
Tagalog	1,458	26.3	4.3	34.8	35.5	25.4	20.2
Other Lowland Luzon	519	12.2	6.8	42.2	33.8	17.2	19.2
Other Upland	356	10.6	11.1	34.1	32.3	22.5	19.3
Visayan	1,526	40.7	5.8	37.7	35.1	21.4	19.8

SOURCE: Tabulations of the four household surveys.

are substantial everywhere but in Pakistan (Table 3). Differences between urban and rural sectors in the mean ages at marriage of women of all duration groups combined (summarized from Table 3) were 2.6 years in Malaysia, 1.2 years in the Philippines, 0.9 years in Korea, and 0.3 years in Pakistan. Differences in mean ages between metropolitan and rural sectors were 3.6 years in Malaysia, 2.3 years in Korea, 1.8 years in the Philippines, but only 0.2 years in Pakistan. The anomalous results for Pakistan, especially for metropolitan Karachi, may reflect the cultural and economic background of many Karachi residents who came to urban Pakistan from rural areas at the time of the partition in 1947 (Hashmi *et al.*, 1964: chaps. 1 and 5; Karim, 1979). On the other hand, the exceptionally large Malaysian differential is surely due to a pervasive cultural difference between the predominately Malay rural sector and the predominately Chinese urban sector, which is superimposed on the normal forces influencing urban-rural differentials.

Although these residential differentials in mean age at marriage are certainly substantial, even sharper differences are evident when we examine the prevalence of "early" and "late" marriage in each residence category (see Table 3). Taking marriages occurring under the age of 15 as "early," such marriages are quite rare in Korea regardless of place of residence; but they are very common throughout Pakistan, even in metropolitan Karachi. Similarly, "late" marriages (after age 22) hardly occur in any sector of Pakistan but have become common in the urban and metropolitan sectors of the other three countries. Late marriage is frequent in the rural Philippines as well.

All of these differences change significantly across the several duration-of-marriage groups, though censorship of the data below age 15 (19 in Korea) and above age 45 or 50 limits our ability to assess these changes adequately.

Accounting for urban-rural differentials

With these urban-rural differentials at the areal and individual levels in view, we examined both sets of data from a multivariate perspective organized around two questions. How is the total variance in age at marriage divided *between* urban and rural sectors (the portion "accounted for" by the urban-rural classification) versus *within* these sectors? And to what degree is the initial urban-rural difference in each country "explained" in least-squares terms by certain socioeconomic characteristics of urban and rural populations? The technique used is multiple classification analysis with urban-rural categories as the

TABLE 3 Patterns of first marriage by urban-rural or metropolitan residence and duration of marriage: Korea, Malaysia, Pakistan, and the Philippines

Sector, country, and duration of marriage	*N*	Age at marriage				
		Under 15	15–18	19–22	23+	Mean
URBAN						
Korea	1,032	1.1	19.5	48.0	31.4	21.1
0–4 years	271	0.0	1.9	40.6	57.5	23.0
5–9 years	242	0.0	8.6	48.5	43.0	22.2
10–14 years	191	0.0	11.0	64.9	24.1	21.2
15–19 years	162	1.0	19.5	67.9	11.6	20.1
20+ years	166	5.8	71.3	22.1	0.8	17.2
Malaysia	3,963	7.9	35.5	36.8	19.8	19.4
0–4 years	767	0.9	21.4	43.1	34.6	21.4
5–9 years	915	2.6	26.3	42.6	28.5	20.7
10–14 years	807	6.0	38.1	37.3	18.5	19.5
15–19 years	657	9.9	44.0	34.1	12.1	18.5
20+ years	817	21.8	50.3	25.6	2.3	16.8
Pakistan	1,180	35.2	47.9	13.7	3.2	16.2
0–4 years	195	19.5	45.1	35.4	0.0	17.5
5–9 years	206	23.3	50.0	26.7	0.0	17.3
10–14 years	248	38.3	48.3	13.4	0.0	15.9
15–19 years	184	46.2	45.1	8.7	0.0	15.4
20+ years	347	42.9	49.3	7.8	0.0	15.5
Philippines	2,349	3.5	31.2	35.3	30.0	20.7
0–4 years	278	0.0	25.2	27.4	47.5	22.8
5–9 years	526	2.9	26.8	35.8	34.5	21.4
10–14 years	480	2.5	27.6	34.5	35.4	21.3
15–19 years	468	3.9	31.9	38.2	26.1	20.2
20+ years	597	6.2	40.4	37.1	16.4	19.0
RURAL						
Korea	850	1.6	35.6	48.8	14.0	19.5
0–4 years	110	0.0	10.2	56.9	32.9	21.9
5–9 years	163	0.0	12.1	64.9	23.0	21.3
10–14 years	171	0.0	17.5	70.0	12.5	20.4
15–19 years	189	1.4	39.5	54.7	4.4	19.0
20+ years	217	4.5	82.9	12.6	0.0	16.7
Malaysia	946	24.0	48.5	20.9	6.6	16.8
0–4 years	156	6.4	55.1	29.5	8.9	18.3
5–9 years	201	20.9	51.8	19.4	8.0	17.2
10–14 years	206	18.0	51.0	25.2	5.8	17.2
15–19 years	168	33.7	42.9	16.3	7.2	16.3
20+ years	215	39.3	43.7	15.8	1.2	15.3

TABLE 3 *(continued)*

Sector, country, and duration of marriage	*N*	Age at marriage				Mean
		Under 15	15–18	19–22	23+	
RURAL *(continued)*						
Pakistan	1,730	39.8	46.0	11.7	2.5	15.9
0–4 years	326	22.7	53.4	23.9	0.0	17.0
5–9 years	354	35.9	42.9	21.2	0.0	16.5
10–14 years	325	40.0	49.2	10.8	0.0	15.7
15–19 years	248	43.5	47.6	8.9	0.0	15.4
20+ years	477	52.4	40.2	7.4	0.0	15.1
Philippines	1,915	7.3	38.9	34.8	19.0	19.5
0–4 years	187	2.8	34.4	39.5	23.2	20.5
5–9 years	451	5.7	35.9	38.8	19.5	19.8
10–14 years	455	5.7	40.1	32.3	21.8	19.8
15–19 years	382	6.8	38.7	34.0	20.5	19.5
20+ years	440	12.0	43.0	32.4	12.7	18.3
METROPOLITAN[a]						
Korea	362	0.7	13.4	48.9	37.1	21.5
0–4 years	108	0.0	1.0	39.7	59.3	23.1
5–9 years	87	0.0	5.9	46.8	47.3	22.4
10–14 years	71	0.0	5.7	65.2	29.1	21.5
15–19 years	50	1.0	20.4	63.2	15.4	20.3
20+ years	46	4.4	60.0	33.4	2.2	17.7
Malaysia	315	5.4	29.1	65.5	0.0	u
0–4 years	75	0.0	17.5	40.2	42.4	u
5–9 years	67	1.6	20.3	41.5	36.6	u
10–14 years	67	4.1	31.8	39.9	24.3	u
15–19 years	58	5.6	15.9	42.1	27.1	u
20+ years	48	20.7	50.6	28.7	0.0	u
Pakistan	168	29.2	54.8	16.0	0.0	16.0
0–4 years	22	u	u	u	u	16.9
5–9 years	29	u	u	u	u	16.3
10–14 years	39	u	u	u	u	16.2
15–19 years	28	u	u	u	u	15.6
20+ years	50	u	u	u	u	15.6
Philippines	478	u	u	u	u	21.3
0–4 years	137	na	17.1	27.3	55.6	23.6
5–9 years	55	1.6	21.2	34.1	43.1	22.2
10–14 years	42	3.9	25.3	33.1	37.7	21.4
15–19 years	36	3.2	24.1	38.7	34.2	21.0
20+ years	208	6.7	36.5	38.2	18.6	19.2

u—unavailable. na—not applicable.

a Seoul, Kuala Lumpur, Karachi, and Manila, respectively.

TABLE 4 Summary of multiple classification analysis results at the individual and areal levels: age at marriage by place of residence

Level of analysis and MCA results	Korea	Malaysia	Pakistan	Philippines
INDIVIDUAL				
Urban mean age	21.1	19.4	16.2	20.7
Rural mean age	19.5	16.8	15.9	19.5
Difference (U–R)	1.6	2.6	0.3	1.2
R^2	.06	.10	.003	.02
GEOGRAPHIC AREA				
Urban SMAF	23.8	23.3	18.2	24.3
Rural SMAF	22.5	20.7	17.3	22.0
Difference (U–R)	1.3	2.6	0.9	2.3
R^2	.72	.54	.08	.57

SOURCES: Published census data for urban and rural sectors of provinces, and the four household surveys.

classificatory variable and educational attainments of husbands and wives as well as duration of marriage as controls.

Both our survey and aggregate census data suggest important urban-rural differentials in age at marriage,[5] but the allocation of variance between versus within these categories is quite different at the two levels of analysis (Table 4). In precisely the fashion suggested by Robinson (1950; see also Duncan et al., 1961:65 ff.; Allardt, 1969; Valkonen, 1969), correlation at the ecological level exceeds that at the individual level; this is particularly true for Korea, Malaysia, and the Philippines. Thus, the substantial rural-urban differentials do not necessarily imply a high degree of individual-level prediction on the basis of rural-urban residence. At the individual level for each country only a small proportion of the variance is explained—a considerable proportion is found *within* the urban and rural sectors.

We can explore this unexplained variance further at the individual level by introducing controls for several covariate characteristics of urban and rural residents. In this analysis we control for duration of

5 Results at the two levels of analysis are not consistent regarding the relative magnitudes of urban-rural differences, however. Measured differences in Korea are greatest in the survey data, but for Pakistan and the Philippines the areal data show the largest differences.

marriage (to adjust for the different pace of recent changes in each sector), and for husbands' and wives' educational levels. These MCA results (Table 5) provide an indication of the interplay between urban-rural residence and educational attainment and the combined effects of these variables and recent changes in them on age at marriage.

In all the countries except Malaysia, most of the initial urban-rural differential is accounted for by these factors. The 1.6 year Korean urban-rural differential reduces to 0.1 years with these factors controlled (column 7); in Pakistan the 0.3 year initial urban-rural difference reduces to nil; and in the Philippines the initial 1.2 year difference reduces to 0.4 years.

Since the ineffectiveness of these controls for Malaysia might reflect that country's unique racial composition by urban-rural sector, which adds to the usual urban-rural differences sharp cultural differences absent in the other countries, we have considered a further MCA of Malaysian urban-rural differences in which racial groups form an additional classificatory variable. In this analysis the urban-rural difference is reduced from 2.6 years to 0.9 years—much closer to the adjusted differences in Korea, Pakistan, and the Philippines, but a substantial remaining urban-rural difference nevertheless. The R^2 is .285.

Other evidence is found in the variance in age at marriage that is accounted for by the urban-rural classification combined with the control variables. The proportion of variance accounted for is on the order of 10 percent for each country, except Korea where it is much higher. In each case other than Korea, the educational attainments of husbands and wives are the critical variables. Evidence for this is found in the sharp reduction of urban-rural differences when education only is controlled (columns 5 and 6 of Table 5).[6] Korea's pattern is unique in that the importance of education is dwarfed by the impact of duration of marriage (column 5). The reason for this is the especially rapid changes in Korean nuptiality which have occurred over recent duration-of-marriage groups.

Urban residence or urban birth?

One additional factor may have an important bearing on age at marriage differences—the composition of these urban and rural sectors with respect to sector of birth. The simple classification of women on

6 The importance of educational attainment might have been even greater in these models if the metric expressing years of schooling had been defined to express the non-linearities which may well exist in the education-marriage relationship (Cochrane, 1979:80–91).

the basis of urban versus rural *current* residence may actually understate true urban-rural differences in marriage patterns if, for example, women who migrate are selected on marriage timing or marry later (or earlier) as a result of having migrated. We hypothesize that migrating women will have intermediate ages at marriage on average, and therefore that the sharp urban-rural contrasts will be even greater when migrants are removed from consideration. By cross-classifying women by their sectors of birth as well as current residences and by examining the marriage experience in each cell we obtain the results shown in Table A2.

The classification of urban versus rural origins is not strictly comparable across the four surveys. In Korea and the Philippines, urban and rural birthplaces are distinguished, but in Pakistan rural origin is based on whether the respondent ever lived in a village or not. In Malaysia, rural origin respondents are those who ever resided in a rural area. These discrepancies probably lead to understatement in the differences shown in Table A2 and below. The following differences summarize the patterns found in Table A2 (all duration groups combined):

Country	Observed urban-rural differential (U–R)	Urban natives–rural-born stayers	Rural-born stayers–rural out-migrants	Rural-born out-migrants–urban natives
Korea	1.6	2.4	-1.0	-1.4
Malaysia	2.6	3.2	-2.5	-0.7
Pakistan	0.3	0.4	0.0	-0.4
Philippines	1.2	1.2	-1.4	0.2

Except in the Philippines, the comparison between women with apparently extensive urban versus rural exposures yields larger differences than the comparison between women by current residence. (Lacking full residence history information, we must infer that women born and currently living in one of the sectors have on average spent most or all of their lives there.) And, except in Pakistan, rural-born women who leave that sector marry substantially later than those who do not. In three of the countries, rural-urban migrants marry earlier on average than native-urban women.

Further investigation of these differentials is warranted but beyond the scope of this paper. It should be determined whether these patterns reveal causal links between marriage and migration or reflect types of migrant selectivity (by social class, for example). The exceptions to the general patterns invite study as well.

THE IMPORTANCE OF LITERACY AND FORMAL SCHOOLING

For excellent overviews of the literature on education variables and family building see Caldwell (1980), Cochrane (1979), Holsinger and Kasarda (1976), and Graff (1979). Graff takes a skeptical view of education's importance for fertility, while Caldwell assigns to education a very central role, but little of the empirical work reviewed by either considers marriage patterns as distinct from childbearing. Graff's own research (1975) and that of numerous others suggest that literacy is an important influence on marriage patterns.

The European and Asian literacy transitions

Data on literacy levels in Europe are rare before the beginning of the 20th century, and by that time very high literacy levels had already been achieved in many countries. Cipolla (1969) has assembled much of the available information for the earlier period; in Figure 6 his data on male and female literacy levels in four European countries are presented along with roughly similar information for a number of Asian nations at recent dates, as well as for the countries we are examining at several points in time.[7] Malaysian data are shown separately by racial group.

The two regions display some basic similarities. Once it begins, the literacy transition is rapid in both regions and follows a similar areal sequence. Educational homogeneity at a low literacy level gives way to areal variation, then to areal homogeneity at a high level of literacy (see Cipolla, 1969: table 3, page 90, for Europe; Sundaram, 1977, for Asia). The sexes are very unequal with respect to literacy at the beginning of the transition (Cipolla, 1969:6), but convergence quickly occurs with literacy becoming nearly universal for each sex. Finally, towns and cities, and in general areas of greatest economic development, lead the transition in both regions.

More interesting are the apparent regional differences. Asia began its rapid literacy transition at very low absolute levels of literacy, whereas many European populations had substantial levels of literacy prior to their industrial and literacy revolutions (see, e.g., Stone, 1969; West, 1978). Indeed, Anderson (1965:34) has suggested in reference to the European pattern that "a literacy rate of 30–40 percent was a

---

7 The European historical series are based upon data for brides and bridegrooms indicating whether they could write their names (see Cipolla, 1969:121 ff.). All other data except for Korea are for literacy (ability to read and write in any language) in the age range of 10 or 15 and older. The Korean data are percentages of those aged six or over who had never attended school.

necessary condition for a country to make a significant breakthrough in per capita income" (see also Bowman and Anderson, 1963). Levels and patterns of transition have been more diverse in Asia. Twentieth century data indicate very low literacy levels in Pakistan and Bangladesh as recently as the 1960s and 1970s, but, simultaneously, high literacy levels in many other Asian countries. Among the four countries under review, Pakistan and Malaysia show initial periods of declining male-female equality (from which Malaysia has since recovered) whereas Korea and the Philippines have now completed rapid transitions to very high levels of literacy and male-female equality.

Perhaps most significant for Asian nuptiality patterns and, more generally, for the evolution of women's roles, is that in many Asian countries literacy exhibits more inequality of the sexes than it does in European countries on record. (Malaysia and Pakistan are extremes in this regard with their declining levels of equality over time.)

Also extremely important for Asian nuptiality change, as compared with the European experience, is that literacy change in the former has been much more rapid. For the data available, the average regional changes per decade (in percentage points) are as follows:

Region (No. of countries)	Male	Female
European ($N = 4$)	5.2	7.9
Asian ($N = 4$)	9.7	9.9

In the four countries under study female literacy has recently been rising by nearly a percentage point per year and male rates have been rising almost as rapidly.

There are highly significant qualitative differences between the European and Asian experiences as well. Most fundamentally there is the secular character of many Asian educational systems compared with the (frequently) church-sponsored education in nineteenth century Europe. This kind of educational exposure can be crucially important in a village setting by offering a direct linkage to the larger polity (Goody, 1968). It should be remembered in this connection that the ideological underpinnings of mass secular education evolved slowly in Europe (Resnick and Resnick, 1977), but the same ideas have motivated state-directed programs of mass education in Asia, often well in advance of significant economic development.

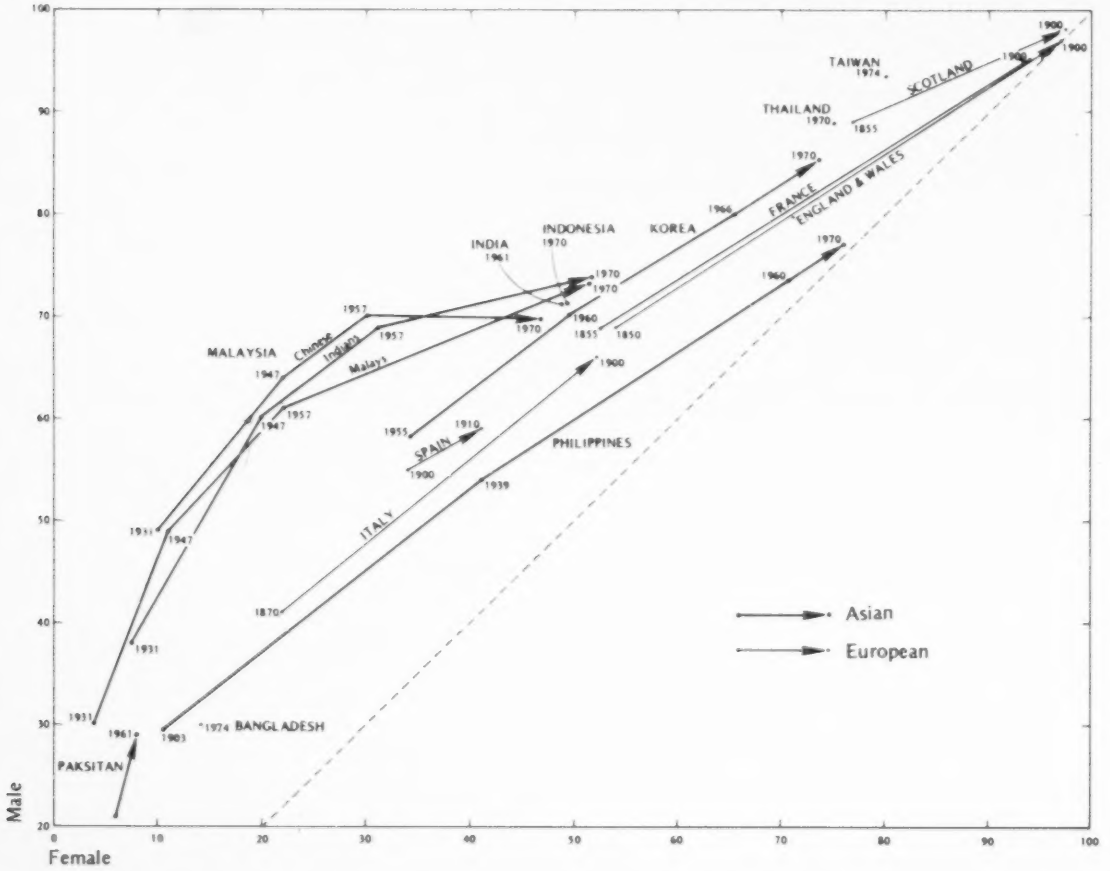
Finally, there is only indirect evidence of education effects on marriage behavior in Europe. For example, the north-south fertility differential in Italy is consistent with prevailing north-south literacy differences (see Livi-Bacci, 1977: chapter 5), but this is an areal association

TABLE 5 Multiple classification analysis of the effect of place of current residence on the mean age at marriage

Country and present residence	N^a (1)	Category mean (2)	Deviation from grand mean (3)	Deviation adjusted for: Duration of marriage (4)	Wife's education (5)	Husband's education (6)	Combined effect of (4), (5), and (6) (7)
KOREA (N=1,814; grand mean=20.2)							
Urban	796	21.07	.87	.45	.17	.24	.07
Rural	1,018	19.52	-.68	-.35	-.13	-.19	-.06
Eta/beta			.25	.13	.05	.07	.02
R^2			.063	.478	.257	.203	.530
MALAYSIA (N=4,484; grand mean=17.66)							
Urban	1,425	19.45	1.79	1.79	1.52	1.48	1.40
Rural	3,059	16.82	-.84	-.83	-.70	-.66	-.62
Eta/beta			.32	.32	.27	.26	.02
R^2			.101	.101	.126	.121	.131
PAKISTAN (N=2,910; grand mean=15.96)							
Urban	1,180	16.18	.22	.27	-.02	.03	.02
Rural	1,730	15.87	-.09	-.10	.01	-.01	-.01
Eta/beta			.05	.06	.00	.01	.00
R^2			.003	.078	.033	.027	.100
PHILIPPINES (N=4,262; grand mean=19.82)							
Urban	2,347	20.69	.87	.87	.27	.29	.30
Rural	1,915	19.46	-.36	-.36	-.11	-.12	-.12
Eta/beta			.13	.13	.04	.04	.04
R^2			.017	.062	.058	.049	.091

a Excludes cases for whom information about one or more variables was not available.

FIGURE 6 The European and Asian literacy transitions: levels by sex for selected countries



and does not establish the individual-level pattern nor the mechanisms involved. More complex areal associations are evident in Lesthaeghe's (1977: chapters 5 & 6) analysis for Belgium. Finally, it should be noted that there is a broad areal association across Europe as a whole. Hajnal's (1965) well-known imaginary line from Leningrad to Trieste separating nuptiality regimes coincides rather well with the literacy variations among European countries described by Cipolla (1969: 71–72).

Female literacy and age at marriage in Asia

By the 1960s Asian societies were widely disparate with respect to male and female literacy rates and the degree of difference between the sexes. In examining the variations in age at marriage associated with these literacy differentials, we compared results at several levels: national, subnational, and individual.

At the national level the association between age at marriage (SMAM) and percentage of females literate is clear in the following results, calculated from data presented by Dixon (1971):

Region	Zero-order correlation	(*N*)
Europe	.038	(27)
Asia	.910	(14)

The correlation across European countries is constrained by the very small variance in female literacy in these countries, but the correlation across Asian nations is substantial.

A similar result was obtained for Asia when data were examined for subnational areas *within* countries (P.C. Smith, 1977; 1980a):

Region	Zero-order correlation	(*N*)
India	.758	(49)
Indonesia	.465	(49)
Korea	.544	(20)
Malaysia	.691	(11)
Pakistan	.463	(90)
Philippines	.268	(132)
Thailand	.328	(71)

In Figure 7 we juxtapose information for a number of Asian countries, regression relationships at the areal level within seven Asian countries, and individual-level data from our four surveys. Although the estimates of literacy and age at marriage from the several sources are not strictly comparable, there is an encouraging degree of con-

sistency among the estimates derived from these different levels and sources of data.

Perhaps the underlying relationship is best summarized by regression slopes relating changes in the female SMAM to changes in the level of literacy:

Country	Regression slope
India	0.069
Indonesia	0.074
Korea	1.015
Malaysia	0.054
Pakistan	0.044
Philippines	0.048
Thailand	0.085

Setting aside the extraordinarily high regression coefficient for Korea (female literacy is very high in Korea and the areal variance on literacy is therefore very small), we have an (unweighted) average slope of 0.062; that is, a 10 percentage point increase in literacy is associated on average with a 0.62 year increase in the SMAM. Combining this result with the 9.9 percentage point per decade change in literacy noted above, we find that the 20th century literacy transition in Asia seems to be associated with an upward shift in the female age at marriage of about 0.6 years per decade.

Our four sets of survey data (presented in Table A3 for duration-of-marriage groups and displayed in a different form in Figure 7) suggest patterns that are broadly similar, country by country. The major difference is that the (singulate) mean ages at marriage from the areal data are uniformly higher than corresponding individual-level estimates, an expected result (P.C. Smith, 1978). On the other hand, most of the slopes are quite similar.

Years of schooling and age at marriage

The mean educational attainments of women in recent marriage cohorts have risen significantly (Table 6).[8] A variety of arguments

8 Because of the way in which educational levels were coded in the four surveys (in broad categories of attainment), we have had to assign rough years-of-schooling equivalents, as follows: Korea (none = 0; some elementary = 3.5; elementary completed = 6; some junior high = 8; junior high completed = 9; some senior high = 11; senior high completed = 12; some college = 14.5; college completed = 16; beyond college = 17; informal schooling = 9); Malaysia (midpoints of categories given); Pakistan (never gone = 0; none or one year = 1; 2–3 = 2.5; 4–5 = 4.5; 6–9 = 7.5; matriculate or intermediate = 11; bachelor's degree or higher = 13); Philippines (exact years of schooling given).

stating why such a trend should affect age at marriage has been made (Timur, 1977; Cochrane, 1979). Rather than sort out these specific kinds of effect, our purposes here are, first, to measure the relationship in the four countries and, second, to assess the impact that rising years of schooling may have had upon rising ages at marriage and urban-rural marriage differentials in recent decades. We consider urban and rural sectors separately and look especially for changes over successive marriage cohorts. Although data are shown in Table 6 for longer marriage durations, our analysis is confined to duration groups 0–9 and 10–19 in order to avoid the problems of bias that were identified earlier.

Both age at marriage and years of schooling move upward over time; but the greatest increases in age at marriage are in the rural sectors, whereas the largest changes in schooling levels take place in the urban sectors (except for Korea, where rural educational progress has apparently been very great). As a result, the urban-rural differential in years of schooling has been decreasing in Korea but increasing elsewhere. The range in years of schooling completed is rather remarkable–from about eight years recently in urban Korea and the Philippines, to virtually nil in rural Pakistan. Rural women in Korea, the Philippines, and Malaysia have more formal schooling than do even urban women in Pakistan.

The association between marriage behavior and schooling is evident among cohorts, between urban and rural sectors, and across countries. A more detailed picture of the relationship is obtained by looking *within* each of these categories and fitting least-squares regression equations. Table 7 presents appropriate correlations between the two variables as well as regression results.

The correlations are modest to small in magnitude, reminding us that much of the individual-level variance in age at marriage is otherwise determined. Nevertheless, there are fairly consistent regression relationships across the various categories. All regression slopes but one are positive, and ten of the 16 fall in the range from 0.100 to 0.300. Four of the remaining six are very low coefficients in rural sectors (Pakistan, Philippines, and Malaysia), one (urban Pakistan) is relatively high, and one, as noted earlier, is negative.

In Korea and Pakistan–and for both sectors in each case–the coefficient rises between the 10–19 and 0–9 marriage cohorts, indicating an increasing nuptiality response to female educational attainment. In Malaysia and the Philippines–again, in both sectors of each–the reverse is true. The down-turn for the Philippines could reflect the very

TABLE 7 Pearson correlation coefficients and least squares regression results relating age at marriage (y) and years of schooling (x) within current residence and duration of marriage categories: Korea, Malaysia, Pakistan, and the Philippines

Country, sector, and duration group	Correlation r_{xy}	Regression of y on x	
		Intercept	Slope
KOREA			
Urban	.450	18.6	.347
0–9	.329	20.8	.231
10–19	.354	19.1	.216
Rural	.468	18.1	.390
0–9	.273	20.3	.224
10–19	.261	19.1	.175
MALAYSIA			
Urban	.284	18.3	.320
0–9	.174	20.1	.187
10–19	.175	18.4	.203
Rural	.056	16.7	.081
0–9	-.102	18.0	-.126
10–19	.016	16.7	.027
PAKISTAN			
Urban	.350	15.7	.326
0–9	.388	16.7	.327
10–19	.252	15.4	.239
Rural	.044	15.9	.121
0–9	.034	16.7	.095
10–19	.006	15.6	.015
PHILIPPINES			
Urban	.223	19.2	.205
0–9	.204	20.3	.197
10–19	.232	19.0	.245
Rural	.104	19.0	.119
0–9	.077	19.6	.069
10–19	.086	19.2	.123

SOURCES: The four household surveys.

high level of female education already achieved; but Korea, with a similar (though more recent) educational achievement, does not decline. We cannot explain the pattern for Malaysia.

The effect of future progress in literacy

The trends toward higher levels of literacy and educational attainment, and toward urban residence, seem likely to continue for some time and to continue to influence nuptiality. While avoiding any predictions about future marriage patterns in the countries under study, we can attempt a forward look at marriage patterns by taking some of the trends and relationships of the past, elaborated above, and projecting them forward in some plausible fashion.

Among the four countries, Korea has already reached an extremely high level of literacy, the Philippines is behind only slightly, Malaysia lags further, while Pakistan has barely begun to undergo significant change. Judging from the tempo measures of literacy change discussed earlier,[9] Malaysia and the Philippines are, respectively, 74 and 64 years behind Korea, and Pakistan is no less than 432 years behind if its current slow pace is not improved. There are urban-rural lags as well, particularly in Pakistan where a 28.0 percentage point lag between rural and urban will require 14 decades to make up at current rates of change. Clearly, the tempo of change needs to be modified.

A recent world-wide compilation of social indicators for women (Boulding, 1977) includes literacy levels and provides a useful context for thinking about future literacy levels in Pakistan, Malaysia, and the Philippines. As one standard, we have used the average Asian female literacy level (54 percent) from that compilation; another standard is the world average–the standard of the "world woman" (57 percent); another is, of course, universal female literacy.

Our procedure is to assess the possible future effects of literacy changes on age at marriage by making use of the regression slopes presented in the preceding section to reflect future responses of age at marriage to literacy changes, along with assumptions about the future course of literacy. These results are shown in Table 8.

This exercise should not be construed as a prediction of nuptiality trends, but it does show how an important regularity from the past might be an important source of nuptiality changes in the future. We have not fitted more elaborate regression equations–incorporating a variety of socioeconomic characteristics–but doing so could provide a firmer basis for anticipating the future.

---

9 Only regional averages were given above. By country, the increases in female literacy per decade (in percentage points) are: Korea, 25.9; Malaysia, 7.9; Pakistan, 2.0; Philippines, 9.7.

FIGURE 7 Relationship between mean age at marriage and the female literacy rate: estimates from survey and census data for selected countries

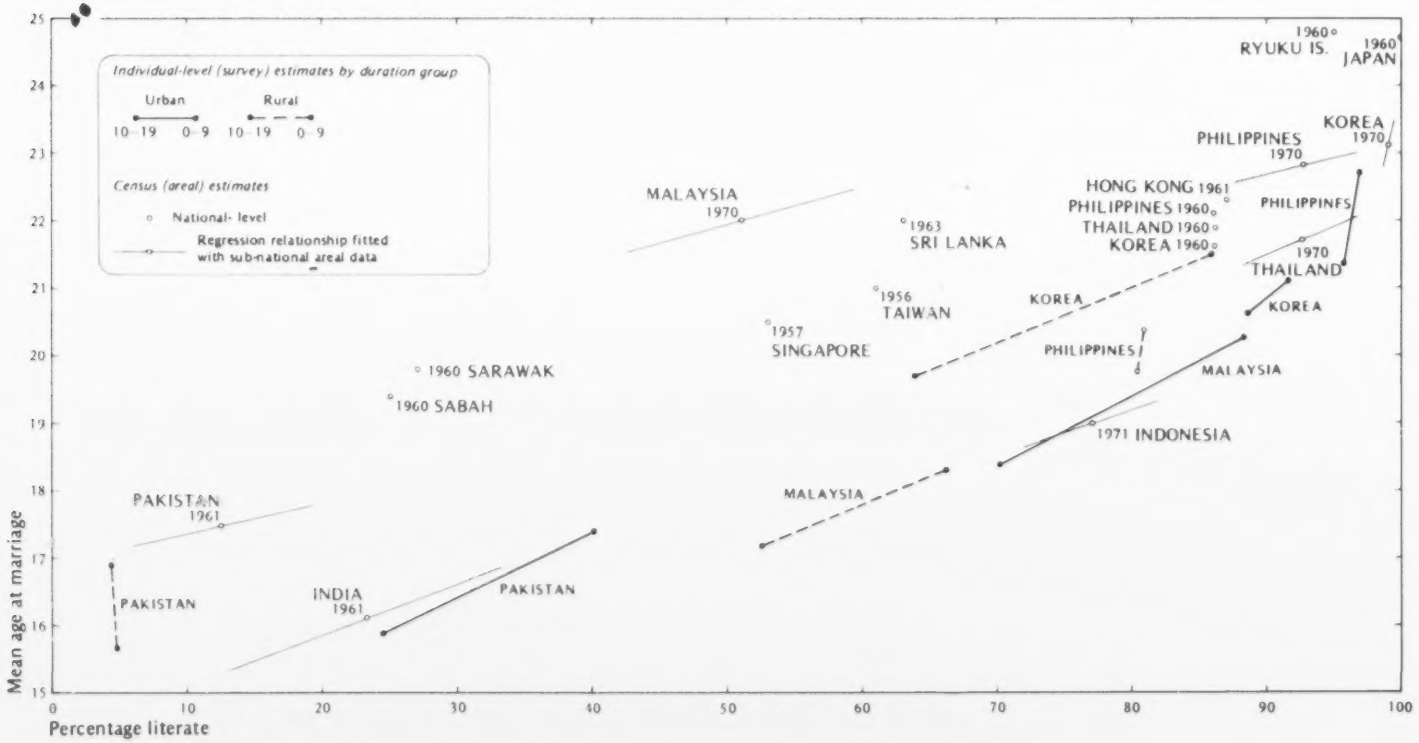


TABLE 6 Parameters of the distribution of age at marriage and years of schooling by current residence and duration of marriage: Korea, Malaysia, Pakistan, and the Philippines

Statistic, variable, and duration group	Korea		Malaysia		Pakistan		Philippines	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
MEAN								
Age at marriage								
0–9	22.7	21.5	21.1	17.7	17.4	16.7	21.9	20.0
10–19	20.6	19.7	19.1	16.7	15.7	15.6	20.8	19.7
20 and over	17.2	16.7	16.9	15.5	15.5	15.1	19.0	18.3
All durations	21.1	19.5	19.5	16.8	16.2	15.9	20.7	19.5
Years of schooling								
0–9	8.1	5.6	5.1	2.9	2.1	0.2	8.0	4.8
10–19	7.0	3.5	3.1	1.5	1.1	0.2	7.1	4.1
20 and over	4.0	1.7	2.0	0.6	0.9	0.1	6.2	2.9
All durations	7.0	3.8	3.9	1.8	1.4	0.2	7.2	4.1
STANDARD DEVIATION								
Age at marriage								
0–9	2.8	2.5	3.8	3.4	3.0	3.2	4.9	4.2
10–19	2.2	2.2	3.6	3.5	2.3	2.4	4.3	4.2
20 and over	1.9	1.6	3.0	3.2	2.3	2.1	3.3	3.5
All durations	3.1	2.8	3.7	3.5	2.7	2.7	4.4	4.1
Years of schooling								
0–9	4.0	3.1	3.6	2.8	3.6	1.1	5.1	4.7
10–19	3.6	3.2	3.1	2.1	2.4	1.0	4.1	3.0
20 and over	3.6	2.6	2.8	1.4	2.3	0.7	5.4	2.3
All durations	4.1	3.4	3.5	2.4	2.9	1.0	4.8	3.6

SOURCES: The four household surveys.

TABLE 8 Hypothetical future nuptiality changes in response to future changes in female literacy

Country and sector	Initial literacy		Mean age at marriage	Estimated response to change in literacy[a]	Hypothetical future age at marriage by future literacy		
	Year	Percentage literate			World average (54%)[b]	Asian average (57%)	Universal literacy (%100)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
KOREA	1970	99.0	23.0	1.015	c	c	24.0
Urban		99.3	23.8	1.094	c	c	24.6
Rural		98.8	22.5	0.085	c	c	22.6
MALAYSIA	1970	51.1	22.0	0.054	22.2	22.3	24.6
PAKISTAN	1961	12.5	17.5	0.044	19.3	19.4	21.4
Urban		33.6	18.1	0.077	19.7	19.9	23.2
Rural		5.6	17.3	0.151	24.6	25.1	31.6
PHILIPPINES	1970	92.8	22.8	0.048	c	c	23.1
Urban		96.8	24.4	0.002	c	c	24.4
Rural		91.0	22.0	0.005	c	c	22.0

a Regression slopes fitted with areal data.

b See Boulding (1977).

c Literacy level has already been surpassed.

CONCLUSION

Considered from almost any perspective, the available evidence suggests continued delays in the nuptiality of Asian women for some time to come. The trend is nearly ubiquitous in the region and the most advanced countries have now reached I_{em} levels not far above .600 or so. Two of these countries, Japan and Taiwan, have recently experienced upturns in I_{em}, so perhaps an I_{em} of approximately 0.600 represents a floor that will be approached eventually by other Asian societies. But such a prognosis is no doubt too simple: the societies of the region exhibit a wide range of initial nuptiality levels, and they have experienced change at varying tempos in response to urbanization and educational advances as well as other influences. It is likely that their behavior in the later phases of the nuptiality transition will be diverse as well.

APPENDIX TABLES

REFERENCES

Afzal, Mohammad, Lee L. Bean, and Imtiazuddin Husain

1973 Muslim marriages, age, mehr and social status. *The Pakistan Development Review* 12(1):48–61.

Agarwala, S.N.

1957 The age at marriage in India. *Population Index* 23(2):96–107.

1969 Pattern of marriage in some ECAFE countries. In *International Population Conference, London, 1967, Proceedings*, vol. 3, pp. 2106–26. Liège: International Union for the Scientific Study of Population.

Alam, Syed Iqbal

1968 Age at marriage in Pakistan. *The Pakistan Development Review* 8(3):489–98.

Allardt, Erik

1969 Aggregate analysis: the problem of its informative value. In Mattei Dogan and Stein Rokkan, eds., *Social Ecology*, pp. 41–51. Cambridge, Mass.: MIT Press.

Anderson, Michael

1976 Marriage patterns in Victorian Britain: an analysis based on registration district data for England and Wales 1861. *Journal of Family History* 1(1):55–78.

Barclay, George W.

1954 *Colonial Development and Population in Taiwan.* Princeton: Princeton University Press.

Becker, Gary S.

1973–74 A theory of marriage. *Journal of Political Economy* 81(4):813–46 and 82(2):11–26 (parts 1 and 2).

Blayo, Yves

1978 First marriages of women in Asia. *Population* 33(4–5):951–88.

Bourgeois-Pichat, Jean

1965 Les facteurs de la fécondité non dirigés. *Population* 20(3):383–424.

Boulding, Elise, Shirley A. Nuss, Dorothy Lee Carson, Michael A. Greenstein

1977 *Handbook of International Data on Women.* New York: John Wiley & Sons.

Bowman, M.J., and C.A. Anderson

1963 Concerning the role of education in development. In Clifford Geertz, ed., *Old Societies and New States,* pp. 247–79. New York: Free Press of Glencoe.

Caldwell, John C.

1963 Fertility decline and female chances of marriage in Malaya. *Population Studies* 17(1):20–32.

1980 Mass education as a determinant of the timing of fertility decline. *Population and Development Review* 6(2):225–55.

Caldwell, John C., Peter F. McDonald, and Lado T. Ruzicka

1980 Interrelationships between nuptiality and fertility: the evidence from the World Fertility Survey. Paper presented at World Fertility Survey Conference, London.

Chang, Chen Tung

1974 *Fertility Transition in Singapore.* Singapore: Singapore University Press.

Cho, Lee-Jay, and Robert D. Retherford

1973 Comparative analysis of recent fertility trends in East Asia. In *International Population Conference: Liège 1973,* pp. 163–81. Liège: International Union for the Scientific Study of Population.

Chung, Bom Mo, James A. Palmore, Sang Joo Lee, and Sung Jin Lee

1972 *Psychological Perspectives: Family Planning in Korea.* Seoul: Korean Institute for Research in the Behavioral Sciences.

Cipolla, Carlo M.

1969 *Literacy and Development in the West.* London: Penguin Books.

Coale, Ansley J.

1969 The decline of fertility in Europe from the French Revolution to World War II. In S.J. Behrman et al., eds., *Fertility and Family Planning: A World View,* pp. 3–24. Ann Arbor: University of Michigan Press.

1971 Age patterns of marriage. *Population Studies* 25(2):193–214.

1975 The demographic transition. Paper presented at the Conference on the Fertility Transition in East Asia, Center for Southeast Asian Studies, Kyoto University.

Coale, Ansley J., and T. James Trussell

1974 Model fertility schedules: variations in the age structure of childbearing in human populations. *Population Index* 40(2):185–258.

Coale, Ansley J., Allan G. Hill, and T. James Trussell

1974 A new method of estimating standard fertility measures from incomplete data. *Population Index* 41(2):182–210.

Cochrane, Susan Hill

1979 *Fertility and Education: What Do We Really Know?* World Bank Staff Occasional Papers, No. 26. Baltimore: Johns Hopkins University Press.

Davis, Kingsley

1975 Asia's cities: problems and options. *Population and Development Review* 1(1):71–86.

Davis, Kingsley, and Judith Blake

1956 Social structure and fertility: an analytic framework. *Economic Development and Cultural Change* 4(3):211–35.

Dixon, Ruth

1971 Explaining cross-cultural variations in age at marriage and proportions never marrying. *Population Studies* 25(2):215–34.

1980 Late marriage and non-marriage as demographic responses: are they similar? *Population Studies* 32(3):449–66.

Duncan, Otis Dudley

1968 Inheritance of poverty or inheritance of race. In Daniel P. Moynihan, ed., *On Understanding Poverty*, pp. 85–110. New York: Basic Books.

Duncan, Otis Dudley, R.P. Cuzzort, and B. Duncan

1961 *Statistical Geography: Problems in Analyzing Areal Data.* Glencoe: Free Press.

Easterlin, Richard

1978 The economics and sociology of fertility: a synthesis. In Charles Tilly, ed., *Historical Studies of Changing Fertility*, pp. 57–134. Princeton: Princeton University Press.

Eversley, D.E.C.

1965 Population, economy and society. In D.V. Glass and D.E.C. Eversley, eds., *Population in History*, pp. 23–69. Chicago: Aldine Publishing Co.

Fernando, Dallas F.S.

1975 Changing nuptiality patterns in Sri Lanka 1901–1971. *Population Studies* 29(2):179–90.

Flieger, Wilhelm, and Peter C. Smith, eds.

1975 *A Demographic Path to Modernity: Patterns of Early-Transition in the Philippines.* Quezon City, Philippines: University of the Philippines Press.

Flinn, Michael Walter, ed.

1977 *Scottish Population History from the 17th Century to the 1930s.* Cambridge: Cambridge University Press.

Flores, Bienvenido V.

1974 An analysis of Philippine family studies, 1952–1971: a preliminary report of an effort at inventory and evaluation of family theory and research in the Philippines. *Saint Louis University Research Journal* 5(11):199–240.

Geertz, Hildreth

1961 *The Javanese Family.* New York: Free Press of Glencoe.

Goode, William

1963 *World Revolution and Family Patterns.* Glencoe: Free Press.

Goody, Jack, ed.

1968 *Literacy in Traditional Societies.* Cambridge: Cambridge University Press.

Graff, Harvey J.

1975 Literacy and social structure in the nineteenth-century city. Ph.D. dissertation, University of Toronto.

1979 Literacy, education, and fertility, past and present: a critical review. *Population and Development Review* 5(1):105–40.

Habbakuk, H.J.

1955 Family structure and economic change in nineteenth century Europe. *Journal of Economic History* 15(1):1–12.

TABLE A1 Basic data for Figure 2

Group	Korea			Pakistan			Malaysia			Philippines		
	N	Mean age at marriage	Year at which plotted	*N*	Mean age at marriage	Year at which plotted	*N*	Mean age at marriage	Year at which plotted	*N*	Mean age at marriage	Year at which plotted
AGE												
9–11												
12–14												
15–17				88	14.5	1966.5				4	14.8	1966.8
18–20				259	15.4	1964.4				103	15.8	1964.8
21–23				346	16.0	1962.0	249	18.8	1964.8	234	17.3	1963.3
24–26	4	16.6	1961.6	358	16.4	1959.4	305	18.1	1961.1	419	18.2	1961.2
27–29	174	17.2	1959.2	365	16.2	1956.2	369	17.5	1957.5	516	19.2	1959.2
30–32	234	18.4	1957.4	342	16.2	1953.2	423	18.2	1955.3	583	19.4	1956.4
33–35	295	19.5	1955.5	242	16.0	1950.0	504	18.1	1952.1	539	19.9	1953.9
36–38	308	20.5	1953.5	294	15.7	1946.7	724	17.8	1948.8	540	20.5	1951.5
39–41	281	21.4	1951.4	272	15.7	1943.7	567	18.2	1946.2	437	20.8	1948.8
42–44	272	21.8	1948.8	169	16.0	1941.0	576	17.6	1942.6	360	21.3	1946.3
45–47	211	21.4	1945.4	114	16.7	1938.7	512	16.4	1938.4	335	21.7	1943.7
48–50	90	19.7	1940.7	59	15.7	1934.7	235	15.6	1934.6	286	22.3	1941.3

DURATION												
0–2	176	22.8	1969	287	17.1	1967	375	19.8	1965	188	21.1	1967
3–5	248	22.5	1966	363	16.9	1964	579	19.0	1962	452	21.3	1964
6–8	227	21.6	1963	343	16.8	1961	640	18.2	1959	604	20.0	1961
9–11	218	21.1	1960	326	15.9	1958	627	18.1	1956	617	20.3	1958
12–14	206	20.4	1957	335	15.7	1955	498	17.7	1953	516	20.0	1955
15–17	242	19.8	1954	265	15.5	1952	514	16.7	1950	501	19.7	1952
18–20	192	18.8	1951	258	15.5	1949	392	17.2	1947	511	19.7	1949
21–23	157	17.4	1948	283	15.4	1946	331	17.0	1944	373	19.2	1946
24–26	139	16.6	1945	230	15.1	1943	262	15.7	1941	265	18.5	1943
27–29	75	15.5	1942	119	15.3	1940	180	14.8	1938	154	17.4	1940
30–32	2	13.5	1939	70	14.6	1937	80	13.3	1935	59	16.1	1937
33–35				26	13.6	1934	6	12.3	1932	19	14.5	1934
36–38												
39–41												
42–44												

NOTE: A blank cell indicates that there were no cases in the age group.

SOURCES: The four household surveys.

TABLE A2 Mean ages at marriage among women by place of current residence, place of birth, and duration of marriage: Korea, Malaysia, Pakistan, and the Philippines

Duration of marriage and place of birth	Present residence							
	Korea		Malaysia		Pakistan		Philippines	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
All durations	21.1	19.5	19.4	16.8	16.2	15.9	20.7	19.5
Urban birth	21.8	20.7	19.7	17.4	16.3	15.4	20.6	20.2
Rural birth	20.4	19.4	19.0	16.5	15.9	15.9	20.8	19.4
Duration 0–4 years	23.0	21.9	21.4	18.3	17.5	17.0	22.8	20.5
Urban birth	23.2	23.0	21.5	18.5	17.7	16.9	22.3	22.5
Rural birth	22.7	21.6	21.2	18.2	16.9	17.0	23.0	20.2
Duration 5–9 years	22.2	21.3	20.7	17.2	17.3	16.5	21.4	19.8
Urban birth	22.8	22.2	20.8	18.3	17.3	15.9	21.2	21.3
Rural birth	21.6	21.3	20.3	16.5	17.2	16.6	21.5	19.7
Duration 10–14 years	21.2	20.4	19.5	17.2	15.9	15.7	21.3	19.8
Urban birth	21.7	21.5	19.8	18.0	16.0	15.1	21.3	20.2
Rural birth	20.7	20.3	18.7	16.5	15.6	15.8	21.3	19.7
Duration 15–19 years	20.1	19.0	18.5	16.3	15.4	15.4	20.2	19.5
Urban birth	20.0	19.9	18.7	16.4	15.5	14.8	20.3	19.4
Rural birth	20.2	19.0	18.0	16.2	15.1	15.6	20.2	19.6
Duration 20 and more years	17.2	16.7	16.8	15.3	15.5	15.1	19.0	18.3
Urban birth	17.8	17.0	16.8	15.5	15.6	14.7	19.0	18.9
Rural birth	17.1	16.7	16.7	15.2	15.2	15.1	19.0	18.3

SOURCES: The four household surveys.

TABLE A3 Mean ages at marriage among females by current residence, duration of marriage, and literacy status: Korea, Malaysia, Pakistan, and the Philippines

Country and literacy category	Urban						Rural					
	All durations	0–4	5–9	10–14	15–19	20 and over	All durations	0–4	5–9	10–14	15–19	20 and over
KOREA												
Literate	21.4	23.0	22.3	21.3	20.3	17.4	20.3	21.9	21.4	20.7	19.3	17.2
Illiterate	19.0	23.7	21.9	19.8	18.4	16.9	18.2	22.1	20.9	19.8	18.8	16.5
MALAYSIA												
Literate	19.9	21.5	20.7	19.7	18.6	16.8	17.1	18.3	16.7	17.2	15.9	16.3
Illiterate	18.5	20.9	20.5	19.1	18.3	16.7	16.6	18.2	18.0	17.1	16.5	15.1
PAKISTAN												
Literate	17.4	18.7	18.4	16.7	16.1	16.4	16.6	17.8	17.4	15.9	15.8	15.9
Illiterate	15.7	16.6	16.7	15.6	15.2	15.2	15.8	16.9	16.4	15.7	15.4	15.0
PHILIPPINES												
Literate	20.8	22.7	21.5	21.4	20.5	19.1	19.5	20.2	19.9	19.8	19.4	18.3
Illiterate	19.1	22.9	19.7	20.3	18.5	18.3	19.4	21.4	19.4	19.6	19.9	18.4

SOURCES: The four household surveys.

Hajnal, John

1953 Age at marriage and proportions marrying. *Population Studies* 7(2):111–36.

1965 European marriage patterns in perspective. In D.V. Glass and D.E.C. Eversley, eds., *Population in History*, pp. 101–43. Chicago: Aldine Publishing Co.

Hashmi, Sultan S., Masihur R. Khan, and Karol J. Krotki

1964 *The People of Karachi: Data from a Survey*. Karachi: Pakistan Institute of Development Economics.

Holsinger, Donald B., and John D. Kasarda

1976 Education and human fertility: sociological perspectives. In Ronald G. Ridker, ed., *Population and Development: The Search for Selective Interventions*, pp. 155–81. Baltimore: Johns Hopkins University Press.

Iftikhar, Naushin, and Mohammad Afzal

1975 Marriage patterns in Pakistan through net nuptiality tables, 1968 and 1971. *The Pakistan Development Review* 14(2):207–32.

International Center for Research on Women

1979 Variations in nuptiality age: an inquiry into its trends and determinants. Mimeographed report, December. Washington, D.C.

Karim, Mehtab S.

1979 *Socioeconomic and Cultural Aspects of Marriage and Fertility in Urban Pakistan*. Papers of the East-West Population Institute, No. 64. Honolulu: East-West Center.

Kim, Mo-Im

1972 Age at marriage and fertility of women in three selected areas in Korea. M.A. thesis, Johns Hopkins University.

Knodel, John, and Mary Jo Maynes

1976 Urban and rural marriage patterns in Imperial Germany. *Journal of Family History* 1(2):129–68.

Korson, J. Henry

1965 Age and social status at marriage–Karachi, 1961–64. *The Pakistan Development Review* 5(4):586–600.

Lee, Che-Fu, and John C. Chao

1973 *A comparative Investigation of Asian Fertility Transition: Varying Patterns of Nuptiality and Marital Fertility*. Liège: International Union for the Scientific Study of Population.

Lesthaeghe, Ron J.

1977 *The Decline of Belgian Fertility, 1800–1970.* Princeton: Princeton University Press.

Levine, David

1977 *Family Formation in an Age of Nascent Capitalism.* New York: Academic Press.

Livi-Bacci, Massimo

1977 *A History of Italian Fertility during the Last Two Centuries.* Princeton: Princeton University Press.

Luhadia, S.R., M.C. Padalia, and O.P. Srivastava

1972 Age at marriage and age at widowhood in ECAFE countries. Paper prepared for Indian Census Centenary Seminar, New Delhi.

McDonald, Peter

1979 Nuptiality patterns in Indonesia. Paper prepared for Indonesian Panel of the Committee on Population and Demography. Washington, D.C.: National Research Council.

McDonald, Peter, and Edeng H. Abdurahman

1974 Marriage and divorce in West Java: an example of the effective use of marital histories. Jakarta: Lembaga Demografi (mimeographed).

Malaysia, Government of, National Family Planning Board

1968 *Report on the West Malaysian Family Survey 1966–1967.* Kuala Lumpur: National Family Planning Board.

Matras, Judah

1965 The social strategy of family formation: some variations in time and space. *Demography* 2:349–62.

Murray, Francis J., Jr.

1972 Increasing population pressure and changing marriage modes in Central Luzon. *Anthropological Forum* 3(2):180–88.

Nash, J., and M. Nash

1963 Marriage, family and population growth in Upper Burma. *Southwestern Journal of Anthropology* 19(3):251–66.

Pakistan, Government of

n.d. *National Impact Survey Report.* Lahore: Training, Research and Evaluation Centre, Population Planning Division.

Palmore, James, Robert E. Klein, and Ariffin bin Marzuki

1970 Class and family in a modernizing society. *American Journal of Sociology* 76(3):375–86.

Pernia, Ernesto M.

1977 *Urbanization, Population Growth, and Development in the Philippines.* Berkeley: International Population and Urban Research.

Petersen, William

1960 The demographic transition in the Netherlands. *American Sociological Review* 25(3):334–46.

Population Information Program

1979 *Age at Marriage and Fertility.* Population Reports, Series M, No. 4. Baltimore: Johns Hopkins University.

Resnick, Daniel P., and Lauren B. Resnick

1977 The nature of literacy: an historical exploration. *Harvard Educational Review* 47(3):370–85.

Robinson, W.S.

1950 Ecological correlations and the behavior of individuals. *American Sociological Review* 15(3):351–57.

Ryder, Norman

1975 Fertility measurement through cross-sectional surveys. *Social Forces* 54(1):7–35.

Sadiq, Nasim

1965 Estimation of nuptiality and its analysis from the census data of Pakistan. *Pakistan Development Review* 5:229–48.

Salaff, Janet W.

1972 Social and demographic determinants of marriage age in Hong Kong. Working Paper No. 2, Institute of Asian and Slavonic Research, University of British Columbia, Vancouver, Canada.

Scheans, Daniel J.

1965 The Ilocano: marriage and the land. *Philippine Sociological Review* 12:57–62.

Smith, Peter C.

1975 Changing patterns of nuptiality. In Wilhelm Flieger and Peter C. Smith, eds., *A Demographic Path to Modernity: Patterns of Early-Transition in the Philippines,* chapter 2. Quezon City: University of the Philippines Press.

1978 Indexes of nuptiality: Asia and the Pacific. *Asian and Pacific Census Forum* 5(2):1–3, 6.

1980a Asian marriage patterns in transition. *Journal of Family History* 5(1):58–96.

1980b Contrasting marriage patterns and fertility in Southeast Asia: Indonesia and the Philippines compared. In Lado Ruzicka, ed., *Nuptiality and Fertility.* Liège: Ordina Editions (forthcoming).

Smith, W.

1961 Marriage, widowhood and divorce in the Federation of Malaya. In International Union for the Scientific Study of Population, *International Population Conference,* Vol. 2, pp. 302–19. Liège.

Stone, Lawrence

1969 Literacy and education in England 1640–1900. *Past and Present* 42:61–139.

Sundaram, Chitra

1977 The literacy transition and female nuptiality: implications for the status of Asian women. Paper presented at the Eighth Summer Seminar in Population, East-West Center, Honolulu.

Timur, Serim

1977 Demographic correlates of women's education: fertility, age at marriage and the family. In *International Population Conference, Mexico 1977,* Vol. 3. Liège: International Union for the Scientific Study of Population.

Valkonen, Topani

1969 Individual and structural effects in ecological research. In Mattei Dogan and Stein Rokkan, eds., *Social Ecology,* pp. 53–68. Cambridge, Mass.: MIT Press.

West, E.G.

1978 Literacy and the Industrial Revolution. *Economic History Review* 31(3):369–83.

RECENT AVAILABLE PAPERS OF THE EAST-WEST POPULATION INSTITUTE

No.

50 The economic value of children in Asia and Africa: comparative perspectives, by Helen Ware, April 1978, v + 36 pp.

51 Rural-urban migration and social mobility: studies of three South Korean cities, by Man-Gap Lee and Herbert R. Barringer, May 1978, vii + 44 pp.

52 Preliminary estimates of Indonesian fertility based on the 1976 Intercensal Population Survey, by Sam Suharto and Lee-Jay Cho, May 1978, v + 21 pp.

53 Circulation in the context of total mobility in Southeast Asia, by Sidney Goldstein, August 1978, v + 69 pp.

54 Effects of program contraception on fertility: a comparison of three Asian countries, by Siew-Ean Khoo, September 1978, ix + 58 pp.

55 Population projections for planning and policy, by William Brass, September 1978, v + 16 pp.

56 Spatial fertility analysis in a limited data situation: the case of Pakistan, by Gary Fuller and Mohammad M. Khan, October 1978, vii + 20 pp.

57 Infant and child mortality in Thailand: levels, trends, and differentials as derived through indirect estimation techniques, by John Knodel and Apichat Chamratrithirong, November 1978, vii + 40 pp.

58 Regression estimates of changes in fertility, 1955–60 to 1965–75, for most major nations and territories, by James A. Palmore, December 1978, vii + 59 pp.

59 Comparison of three acceptance strategies: a progress report, by Robert G. Potter, Frances E. Kobrin, and Raymond L. Langsten, February 1979, vii + 16 pp.

60-A On the nature of the transition in the value of children, by Rodolfo A. Bulatao, March 1979, xvi + 104 pp.

61 Prediction of family planning and family size from modernity value orientations of Indian women, by Bishwa Nath Mukherjee, April 1979, v + 50 pp.

62 Issues in the comparative analysis of World Fertility Survey data, by Ronald Freedman, July 1979, v + 22 pp.

60-B Further evidence of the transition in the value of children, by Rodolfo A. Bulatao, November 1979, vii + 84 pp.

63 Own-children estimates of fertility for Thailand based on the 1970 Census, by Robert D. Retherford, Chintana Pejaranonda, Lee-Jay Cho, Apichat Chamratrithirong, and Fred Arnold, November 1979, vii + 52 pp.

64 Socioeconomic and cultural aspects of marriage and fertility in urban Pakistan, by Mehtab S. Karim, December 1979, v + 26 pp.

65 Voluntary sterilization: its demographic impact in relation to other contraceptive methods, by Dorothy L. Nortman, January 1980, vii + 23 pp.

66 Prevalence and demographic significance of contraceptive sterilization in Fiji, the Republic of Korea, and Sri Lanka, by Charles F. Westoff, Noreen Goldman, and Minja Kim Choe, April 1980, vii + 27 pp.

67 Urbanization and the growth of small towns in Sri Lanka, 1901–71, by Dayalal Abeysekera, April 1980, v + 42 pp.

68 The intellectual's image of the city in Taiwan, by James Chan, May 1980, v + 22 pp.

69 Nuptiality in Thailand: a cross-sectional analysis of the 1970 Census, by Aphichat Chamratrithirong, November 1980, vii + 55 pp.

60-C The value of children to Australian, Greek, and Italian parents in Sydney, by Victor J. Callan, December 1980, vii + 60 pp.

THE EAST-WEST CENTER—officially known as the Center for Cultural and Technical Interchange Between East and West—is a national educational institution established in Hawaii by the U.S. Congress in 1960 to promote better relations and understanding between the United States and the nations of Asia and the Pacific through cooperative study, training, and research. The Center is administered by a public, nonprofit corporation whose international Board of Governors consists of distinguished scholars, business leaders, and public servants.

Each year more than 1,500 men and women from many nations and cultures participate in Center programs that seek cooperative solutions to problems of mutual consequence to East and West. Working with the Center's multidisciplinary and multicultural staff, participants include visiting scholars and researchers; leaders and professionals from the academic, government, and business communities; and graduate degree students, most of whom are enrolled at the University of Hawaii. For each Center participant from the United States, two participants are sought from the Asian and Pacific area.

Center programs are conducted by institutes addressing problems of communication, culture learning, environment and policy, population, and resource systems. A limited number of "open" grants are available to degree scholars and research fellows whose academic interests are not encompassed by institute programs.

The U.S. Congress provides basic funding for Center programs and a variety of awards to participants. Because of the cooperative nature of Center programs, financial support and cost-sharing are also provided by Asian and Pacific governments, regional agencies, private enterprise, and foundations. The Center is on land adjacent to and provided by the University of Hawaii.

THE EAST-WEST POPULATION INSTITUTE, established as a unit of the East-West Center in 1969 with the assistance of a grant from the Agency for International Development, carries out multidisciplinary research, training, and related activities in the field of population, placing emphasis on economic, social, psychological, and environmental aspects of population problems in Asia, the Pacific, and the United States.

BEST AVAILABLE COPY